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Inside facts about a sealed electric motor

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SUBMERSIBLE PUMP

A close-coupled motor-pump unit that operates *entirely submerged in water* at *any* well-depth. The *only* basic improvement in deep-well pump design...since BJ introduced the deep-well turbine in 1901.

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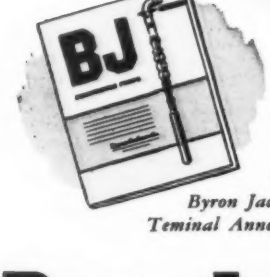

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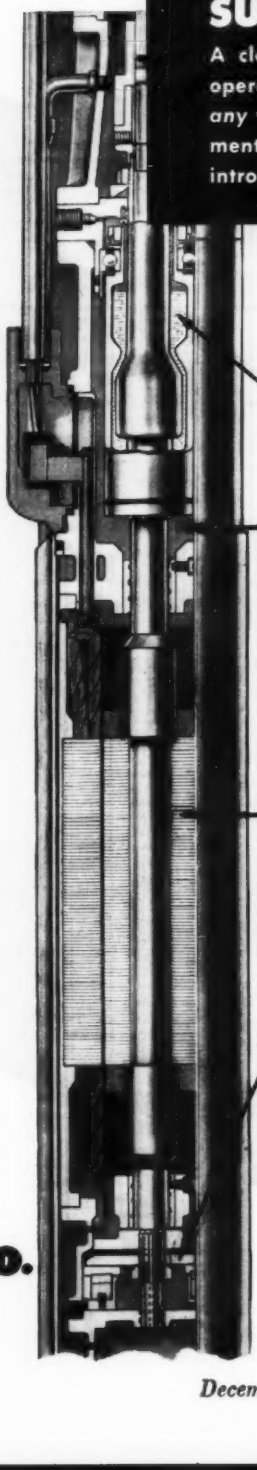

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of high dielectric strength fills motor case, prevents water from contacting motor. The oil is also a cooling agent, circulating continuously to carry heat from windings to the water-cooled outer shell.

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carries entire thrust load of pump and motor.

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Our Municipal Notebook

Make Those Specifications Definite!

WHEN an engineer writes specifications he can make the words act as constructive, useful tools, if he uses them carefully and honestly. By doing so he can reflect his own thorough training. Or he can use them as the nebulous screen to hide behind in order to cover his own engineering shortcomings and uncertainties.

So persistent have been the protests against engineering clichés, such as the classic "as the engineer may direct," that they are beginning to take on a venerable aspect. They only reflect the fact that the engineer writing such phrases does not know how to specify exactly but wistfully hopes that through them he will get a good job anyway. Legally, they have not much standing and consequently are not of much protection.

The other day, however, we found some clauses like them in an otherwise well-balanced set of specifications covering a macadam-type base. They set down clearly the grading of the material, and also specify definitely the limiting roller weight.

However, the specifications proceeded with these interesting clauses:

1. The rolling shall continue until the rock no longer creeps nor moves.

2. Should there be insufficient fines in the rock to obtain these results, screenings shall be added in the proper amount and broomed and rolled into the base.

3. Water shall be added in such amounts and at such times as may be necessary.

Just to be technical, when does a base stop creeping and moving? If one wished to be technical, he could make such an interpretation that the contractor never would complete his rolling. We often have been amazed at the movement a slight pressure can produce in a heavy object, particularly when delicate instruments record these movements. We can recall doing nothing more than giving a heavy slab of concrete a light kick and seeing the movement measured in an instrument at the other side of the slab some 25 feet away.

Point two gives another example of the engineer's throwing the responsibility onto the contractor. If he specifies the mix, he should not require the contractor to correct it for him at his own expense. Moreover, what justification is there anyway for a partial correction that applies the needed fines to the surface of the slab?

Point three needs little comment. We see not the slightest effort made to call for a definite moisture content in the base, or number of gallons applied. Who knows what "necessary" is?

The difficulty is that vagaries like these are worse than no protection at all. They lead a city to believe it has a guarantee of good engineering when actually it does not. Clauses like these run up the "contingency" item in contractors' estimates.

As one contractor has said, "Don't be afraid to put down details, either in the plans or specifications. *And make them definite.*"

Technical Terminology and Plain English

AT THE recent annual conference of the National Institute of Municipal Law Officers, a story was told of a lawyer's successful attempt to translate scientific terminology into colloquial English.

It is alleged that a New York plumber of foreign extraction wrote to one of the government agencies saying he had found that hydrochloric acid quickly opened drainage pipes when they became clogged, and was it a good thing to use? The technical people in the agency replied to the plumber with the following: "The efficacy of hydrochloric acid is indisputable, but the corrosive residue is inconsistent with metallic permanence."

To this the plumber promptly replied with effusive thanks for telling him that the method was all right. This led to a second effort on the part of the technical people, who replied to the plumber's letter with this: "We cannot assume responsibility for the production of toxic and noxious residue with hydrochloric acid and suggest that you use an alternative procedure."

The plumber again replied, this time to the effect that he was in full agreement; hydrochloric acid worked fine.

The plumber apparently had a large business, and the technical experts were somewhat disturbed over what might be in prospect for the drainage systems of New York's skyscrapers unless the misunderstanding was promptly straightened out. They referred the matter to one of their lawyers, who wrote:

"Don't use hydrochloric acid; it eats hell out of the pipes."

For Better Administration of Licenses and Service Charges

INCOME from licenses in many cities might be improved by higher rates and by a better enforcement of existing ordinances, Miner B. Phillips, executive director of the Municipal Finance Officers Association, pointed out at the anuual conference last month of the New Jersey League of Municipalities.

"Recently," said Mr. Phillips, "by counting the number of taverns listed in the telephone directory and comparing this total with the number licensed, one city found that a great number of taverns had never been legally licensed. This could equally well apply to other types of licenses. For example, another city which installed a sales tax discovered by checking with the state sales tax return that a number of businesses subject to regulation had not been so licensed.

"Because of increased costs, a careful review of service charges should be made to determine that such charges cover the cost of services rendered. This would be especially applicable to such items as sewer rentals, garbage collection charges, and special assessments for street sprinkling, snow removal, street cleaning, street lighting, and other similar charges."

Reconstruction Plans Receive Discussion

THE planning programs and policies of the Philippines, Poland, and Great Britain were described at a meeting, recently sponsored by the New York Architectural League, entitled "What Should Our Cities Be Like?"

Matthew Nowicki, Polish architect, presented a statement of principles behind the Warsaw master plan; F. J. Osborn outlined the British policy of building new towns, and C. McKim Norton, New York Regional Plan Association, discussed his war experience in the planning of Manila. Lewis Mumford, noted author and lecturer, served as chairman.

Of special interest was Dr. Nowicki's description of the plans to reconstruct Warsaw, capital of Poland, which was 85% destroyed during the war years. He explained that the present master plan, developed by several planning groups during the occupation period, was completed after the war by a municipal agency, the Office of Reconstruc-

THE RESPONSIBILITY OF MANAGEMENT IN THE BELL SYSTEM

IT USED TO BE that the owners of practically every business were themselves the managers of the business. Today, as far as large businesses are concerned, a profound change has taken place. In the Bell System, for instance, employee management, up from the ranks, and not owner management, is responsible for running the business.

This management has been trained for its job in the American ideal of respect for the individual and equal opportunity for each to develop his talents to the fullest. A little thought will bring out the important significance of these facts.

Management is, of course, vitally interested in the success of the enterprise it manages, for if it doesn't succeed, it will lose its job.

So far as the Bell System is concerned, the success of the enterprise depends upon the ability of management to carry on an essential nationwide telephone service in the public interest.

This responsibility requires that management act as a trustee for the interest of all concerned: the millions of telephone users, the hundreds of thousands of employees, and the hundreds of thousands of stockholders. Management necessarily must do the best it can to reconcile the interests of these groups.

Of course, management is not infallible; but with its intimate knowledge of all the factors, management is in a better position than anybody else to consider intelligently and act equitably for each of these groups—and in the Bell System there is every incentive for it to wish to do so.

Certainly in the Bell System there is no reason either to underpay labor or overcharge customers in order to increase the "private profits of private employers," for its profits are limited by regulation. In fact, there is no reason whatever for management to exploit or to favor any one of the three great groups as against the others and to do so would be plain stupid on the part of management.

THE BUSINESS cannot succeed in the long run without well-paid employees with good working conditions, without adequate returns to investors who have put their savings in the enterprise, and without reasonable prices to the customers who buy its services. On the whole, these conditions have been well-met over the years in the Bell System.

Admittedly, this has not been and is not an easy problem to solve fairly for all concerned. However, collective bargaining with labor means that labor's point of view is forcibly presented. What the investor must have is determined quite definitely by what is required to attract the needed additional capital, which can only be obtained in competition with other industries.

AND in our regulated business, management has the responsibility, together with regulatory authorities, to see to it that the rates to the public are such as to assure the money, credit and plant that will give the best possible telephone service at all times.

More and better telephone service at a cost as low as fair treatment of employees and a reasonable return to stockholders will permit is the aim and responsibility of management in the Bell System.

Walter S. Gifford

WALTER S. GIFFORD, *President*
AMERICAN TELEPHONE AND TELEGRAPH COMPANY

tion of the Capital, which employed more than 400 architects and technicians for this work.

Planned on a neighborhood-unit basis, each protected by green belts, the city as a whole is divided into a number of districts classified roughly as residential areas and working areas. The relation of the residential sections to the places of work is based on the assumption that no more than 30 minutes of travel time should divide the one from the other.

The city's street pattern is based on a super-block concept. Each superblock is at least 1,000 feet wide, with rare traffic crossings and with pedestrian movement completely independent from vehicular traffic. The master plan also incorporates a civic center located adjacent to the city's most spectacular feature, the river.

As for carrying out the plan, the Polish architect made no effort to minimize the difficulties involved. The city has acquired all the land within its boundaries, he stated, giving each owner a free lease for 99 years, allowing him to build, or sell his right to build. The problem now, he said, is one of stimulating private enterprise to embark on a large-scale building program or developing a cooperative housing movement, similar to that in Sweden, to do the job.

Connecticut Clinic Proposes Planning and Zoning Federation

THE establishment of a federation of Connecticut planning and zoning agencies was proposed and unanimously agreed upon by those attending the second annual Connecticut Planning and Zoning Clinic in Hartford on November 12. Elmer R. Coburn and the staff of the Connecticut Development Commission were designated as a committee to set up such a permanent organization and a clearing house of information on planning and zoning matters in the state. It was pointed out at the meeting that similar groups now exist in New York, New Jersey, and Massachusetts.

One of the important contributions of the clinic, attended by officials and citizens from municipalities throughout the state, was the clarification and interpretation of the new Connecticut planning and zoning legislation. Distributed to all who registered were printed leaflets containing the highlights of each of the three new acts on municipal planning, zoning, and regional planning. Also made available was a mimeographed compilation of General Statutory Legislation of Connecticut on planning and zoning, published by the Development Commission's Division of Research and Planning.

Interest was high and questions flew thick and fast at the various round-table sessions devoted to the following aspects of planning: Industry—Its Place in a Progressive Community; Successful Shopping and Business Center requirements; Effective Zoning; Highways of the Future; Getting Together on a Regional Basis; Raw Subdivisions vs. Planned Neighborhoods.

Agreement on the need for establishing a state land-use advisory committee to give aid on industrial location problems of individual municipalities was reached at the round table on industry, chaired by Frederick P. Clark, planning director of the Regional Plan Association of New York City. Technical aspects of zoning and its administration in the state received intensive discussion at the panel chaired by Flavel Shurtleff, associate professor of regional planning at M. I. T. Other panel chairmen included George T. Barrett, first selectman, Town of Stamford; Roy E. Jorgensen, deputy highway commissioner, State of Connecticut; Hubert W. Stone, director, Municipal Consultant Service, Connecticut Public Expenditure Council, and Frederick J. Adams, professor of city planning, M. I. T.

To Fit Long-Term Planning Into Daily Administration

AN excellent new chapter on the programming of municipal services appears in the third edition of *The Technique of Municipal Administration,* recently published by the International City Managers' Association.* It is declared in this chapter that the chief administrator and his staff have two responsibilities in the programming of city services:

1. It is up to the chief administrator to see that the pattern of city services is periodically and systematically reviewed by the people of the city through their legislative body, and that the various alternatives are presented to them for increases and decreases in particular services, for the discontinuing of services, and for the initiation of new services.

2. It is up to the chief administrator and his staff to see that estimates, as accurate as possible, are made available to the policy-determining agencies for predicting the consequences of increasing or decreasing the expenditures for particular services. That this is an extremely difficult task may be admitted—but this in no way excuses the administrative staff from carrying it out as completely as possible.

Steps in Programming Services

Although there is no one best way to prepare and to administer the program of public services, the chapter points out, the following are the principal steps that have to be taken:

1. Enumerate carefully the objective or objectives of each department of the city government.

2. Estimate how the need for each municipal service is expected to increase or decrease over a period of time due to changes in population, and other factors.

3. Identify the key factors that determine the cost of each municipal service.

4. Set tentative standards of quality or adequacy for each service.

5. Having taken steps 2, 3, and 4, determine the approximate annual cost of providing each particular service. Subdivide this into (a) annual operating and maintenance costs, and (b) cost of needed capital improvements and major equipment purchases.

6. Estimate the revenues that would be derived at existing tax rates, and at lower and higher tax rates, together with revenues from sources other than taxation.

7. Combine the expenditure estimates for the several city departments and balance them against the estimated revenue—adjusting the several items to achieve a balance.

8. Draw up a capital budget, scheduling by years the capital items needed by each department to carry out the service program. A general program can be drawn up for fifteen or twenty years, with a more specific year-by-year schedule for the first five or six years.

9. Draw up the annual budget, basing it directly on the long-term service plan and the first year's installment of the capital budget.

Developing a program of this kind, which should not be static and which should be reviewed periodically, is not an overwhelming task if the steps are taken one by one.

Almost every city is already carrying out a large part of the above procedure, but many cities are losing the principal advantages of long-term planning through failure to program in a systematic and integrated fashion, rather than to deal with the steps piecemeal. In many cities that have comprehensive city plans, the plan remains merely a design upon paper because there is not an adequate bridge—in the form of the capital budget and annual budget procedure—between the long-term plan and the everyday administrative activity in the city hall. In other cities, an elaborate annual budget procedure becomes an almost useless routine of paper-work because the annual budget is not properly related to a long-term service program and a city plan.

* See page 135 of THE AMERICAN CITY for August for a brief review of this new edition.

1,000,000-GAL. HORTON ELEVATED TANK—
part of the general water extension program at Hickory

THE erection of an elevated tank is, in many cases, the main step taken when improving or making extensions to a municipal water supply system. At Hickory, N. C., the following threefold program was recently undertaken . . . (a) Filter plant capacity was increased from 1.5 mgd to 3.5 mgd; (b) The 1,000,000-gal. Horton elevated tank shown above was erected to supplement the storage capacity provided by three 20-ft. diam. standpipes; and (c) Feeder line capacity was increased to provide a sufficient volume of water for fire protection and industrial use in a rapidly-developed industrial area.

* * *

Large capacity elevated tanks like the one shown here are installed in water distribution systems to improve service, to minimize pressure variations and to reduce pumping costs. Why not get quotations on a Horton elevated tank when planning better water service for your city?

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Atlanta 3.....2114 Healey Bldg.
Havana.....402 Abreu Bldg.
Detroit 26.....1501 Lafayette Bldg.

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PENNSYLVANIA

Water Supply and Treatment

Algae Analysis

ACCORDING to Dr. C. Melvin Palmer, Associate Professor of Botany, Butler University, Indianapolis, Ind., there are four main problems to be solved in order that the problems of algae in water be attacked efficiently. These may be listed as follows:

- A biological study of lakes and streams at all seasons to identify all algae both at the headquarters and near the point of intake.
- A pure culture study of the microorganisms themselves.
- A development of some type of indicator that will disclose evidence of various forms of algae, thus eliminating the need for individual examinations to show each type.
- The development of a sampling service so that data can be obtained and reported continuously.

Dr. Palmer named these points in a paper delivered before the Indiana Section of the American Water Works Assn. held in Indianapolis. He further pointed out that often the control of algae is tried too late, that dead algae are not much better than the living, and that whether alive or dead they clog the filters and cause water works difficulties. Although there are many types of algae, generally speaking only a few are of importance to specific operators.

How Water Quality Improves

ALTHOUGH customer expectations in regard to water quality become increasingly exacting, research, not only by academic groups but also by wide-awake water works operators, has made it possible to meet these high standards. This was pointed out by Elwood L. Bean, Principal Assistant Engineer, Bureau of Water, Philadelphia, in a discussion delivered before the Pennsylvania Water Works Operators' Association recently in State College, Pa.

At one time operators judged filter performance by the appearance of floc in effluent water passed through liter observation flasks and felt that turbidities of 1.0 ppm and under were satisfactory. Today submarine lights placed in clear wells at depths of 10 to 20 feet control the filter, and plants are judged not on the basis of turbidity, but on more precise chemical tests.

An aluminum content in the water up to 0.5 ppm was once considered good, and many plants operated with aluminum contents in excesses of this. Today, by use of pH correction, aluminum in effluents may be reduced to a fraction of those former quantities. Aluminum in plant effluents will not only produce precipitates, but also, in bicarbonate form, can cause chain chemical reactions that produce rapid pips corrosion.

Many developments have occurred that help hold down the corrosion in mains. At one time Mr. Bean found that he could reduce the amount of iron picked up between the plant effluent and the customer tap to only one tenth of the former content by raising the pH from 7.6 to 9.6, thus enabling him to stop unsatisfactory red-water conditions. This indicated the need for converting all alkalinity to the carbonate, leaving no half-bound carbon dioxide or bicarbonate in the water coming in contact with the distribution piping.

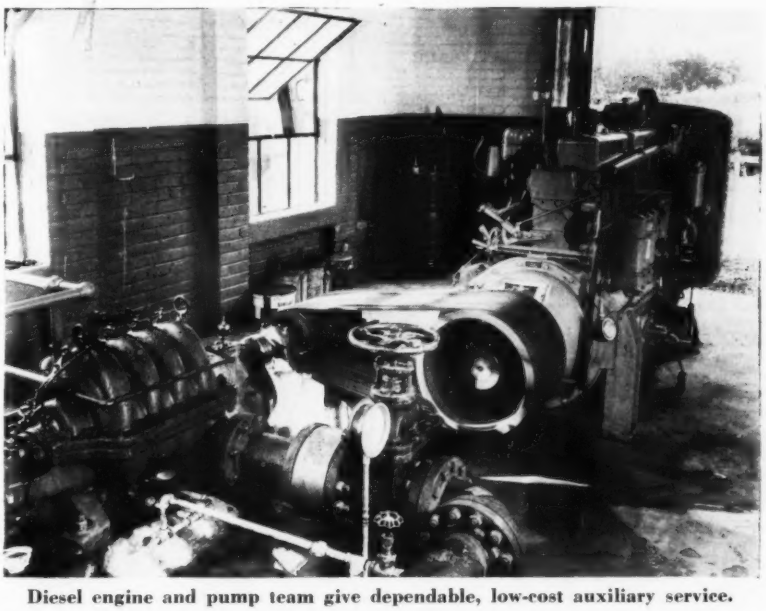
Corrosion, however, is not the only distribution problem. Deposits in mains often remain in dead spots for years. In one system, manganese sediments were noted in taps on days of highest draft four years after the elimination of all manganese from the water supply.

A point that came in for special attention was that of open distribution reservoirs. The protection and maintenance of open reservoirs, treatment for algae control, and rechlorination are all relatively expensive and can overcome only to a limited degree many of the undesirable features mentioned. When balancing these costs against the carrying cost for covering, Mr. Bean expressed the opinion that many distribution reservoirs could be covered and produce a net saving as well as eliminate the dangers of pollution and disagreeable conditions.

The Water Goes Over the Mountain

RELIABILITY without standby electrical costs is the reason Highland, N. Y., went to a diesel-powered pumping station to reinforce its present water supply. The relatively small Highland Water District, Highland, N. Y., serving less than 2,000 people, normally draws from a mountain reservoir; but, when this supply becomes low, it is reinforced with an auxiliary line tapping a mountain stream. This auxiliary line, consisting of an 8-inch cast-iron pipe, must go over a 500-foot rise to reach the main reservoir and supply line.

To furnish this lift, Superintendent Frank Marx uses a pumping station equipped with a Caterpillar diesel engine driving a Jaeger pump. The pump is connected directly to the motor by 16-V-belts. The use of diesel power eliminates the need for standby electric power and at the same time gives the pumping station the economy of operation that diesel power provides.



Diesel engine and pump team give dependable, low-cost auxiliary service.

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In spite of shortages, we are putting forth every effort to serve all Industry to the best of our ability. Naturally, many sizes and certain products are out of stock. However, for the most part you can depend on Ryerson for immediate shipment of a wide range of steel products.

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reinforcing	Allegheny Stainless—	Bolts, Rivets
Structurals	sheets, plates, shapes,	Babbitt
Plates—	bars, tubing, etc.	Metal Working Tools
Inland 4-Way Floor Plate	Sheets and Strip Steel	& Machinery, etc.

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RYERSON STEEL

Sewerage and Sewage Treatment

That Unhappy Reputation

BACK in our Sunday-school days we used to puzzle over the prophesy that the sins of the fathers would return to trouble even the third and fourth generation. The Canton, Ohio, sewage treatment plant is finding every word of it true. (See page 82.)

In 1894, this city took its sanitation problems in hand and built itself a sewage treatment plant and located it on a convenient spot in the southern city limits. How well it worked we do not know, but of this we are sure—it smelled. To say it more bluntly and ungraciously, it stank to high heaven.

The people of Canton patiently accepted this olfactory sinner for 20 years and then decided that they had had enough. They tore down the old plant, destroyed every vestige except a few massive foundations that remain as evidence of the plant's unhappy career, and turned the job of sewage treatment over to the old plant's offspring.

The new plant was sturdy, nurtured to a healthy start by the best that the sanitary engineering field had to offer then. The plant used the classic process introduced by the famous German sanitary engineer, Dr. Karl Imhoff, whose name still is synonymous with excellence in sewage treatment practice.

But they punished this second-generation sewerage servant by making it do its work a long and lonely six miles away. Sewage treatment, Cantonians decreed, smelled. They had no objection to treating the wastes from their city so that they would not be a nuisance or a public health hazard to their neighbors, but they wanted the work done far, far away, and were willing to build a long, expensive interceptor sewer to see that it was.

New Plant—Old Problems

Of course, as everyone knows, the bacteria associated with sewerage cared little whether they were in the dark depths of an Imhoff tank or in the long, cavernous channel of an interceptor sewer. They would be glad to begin work in either. In fact, those producing hydrogen sulphide were even more pleased with these surroundings. This second-generation plant tried manfully to treat sewage that had a stout head start in resisting treatment, did a commendable job, but could not get rid of that eye-watering, stomach-turning smell.

In 1926, a third-generation plant came on the scene. It provided, at the same location, more Imhoff-tank capacity, and produced an even finer grade of effluent by the use of trickling filters. But it still was plagued by the sins of the grandfather and had to do the best it could with a stale, sulphurous sewage that was, incidentally, gradually eating away the interceptor sewer. And it had the additional problem of filter flies—hordes of them, so aggressive at times that they would drive the operators off the grounds.

For another 20 years, this bedeviled plant did what it could to take the wastes from the city of Canton and treat them so that they would not be dangerous to her neighbors. In that period the wastes became stronger and more sulphurous, until Cantonites recognized that this servant-outcast was willing to try, but wasn't going to have much luck handling any greater amounts of sewage.

Engineers Propose New Plant

So the city called for the services of one of those engineering firms whose reputation is recognized and admired throughout the world. This firm examined the evidence and then recommended, in a terse, unemotional technical document, that a fourth-generation plant be given a chance. In effect, they recommended that it be allowed to return to those haunts where its great-grandfather had pursued his doubtful career and let it regain a lost reputation. Give it, they said, an opportunity to use the proven activated sludge process, force on it the additional burden of garbage disposal, and they would stake their reputation as a great engineering firm on the promise that Cantonites would be proud of its fourth-generation sewage treatment plant.

It seemed like a fair decision, this belated recognition of a hard-working, conscientious, unpopular servant. And it is one that the sanitary engineering field is watching with interest. So far it seems that Cantonites are impressed by these recommendations, but not thoroughly convinced.

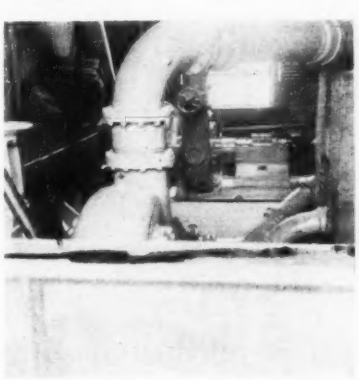
Residents Adamant

"Let this fourth-generation servant come closer," they apparently are saying, "but let him come no nearer than 6,000 feet from our borders. He may be well recommended, but he still comes from an odorous family."

Plant Still Pariah

So it probably will be (although we understand that the decision is not yet final), that, despite the recommendations of an engineering firm that simply would not dare make a mistake on such a fundamental principle, the sewage treatment plants of Canton will continue to suffer by exile "until the third and fourth generations."

Allentown's Sewage Pumps



Just a small corner of the Allentown, Pa., sewage treatment plant, but, nevertheless, an important one. These two Morris pumps transfer the detritus tank solids (15-minute-settleable) to the Dorr revolving fine screens for removal.

Akron Uses Air Rescue Boats To Inspect Trunk Sewers

THOSE inflated rubber boats that aviators used during the war have gone to work for the sewer department in Akron. Wendell LaDue, Chief Engineer of the Akron, Ohio, Bureau of Water and Sewage, has found them of great help in inspecting the larger sewers. Workmen lower the deflated boats through a manhole, inflate them in the sewer itself, and ride in relative comfort down the section of sewer to be inspected. They find the boats equally easy to remove from the sewer by deflating them and slipping them through the manhole.

--WATER FOR CANADA'S GREAT FALCONBRIDGE NICKEL MINES

—Twelve miles from Sudbury, Canada in the heart of the rich nickel mining area, two newly completed Layne Well Units are now producing over 3,000 Imperial Gallons of Water per Minute. Started in weather 30 degrees below zero, the two wells were drilled, equipped, tested and delivered without delay. Both wells are electric motor powered and are providing water for the mines and for the townsite. Ore from these mines is shipped to Norway for refining.

pumps

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Refuse Collection and Disposal

A Sanitary Fill Born of Necessity

SAN FRANCISO'S use of the fill-and-cover method of refuse disposal was adopted through force of circumstance rather than through any deliberate plan. Officially, incineration is the method that the Board of Supervisors and the voters selected in the 1930 election, but, on the same ballot, they failed to approve the bond issue necessary for incinerator construction, and the approved resolution has never been repealed. Ralph G. Wadsworth, City Engineer, City and County of San Francisco, at the annual convention of the League of California Cities meeting in San Francisco, pointed this out in a paper explaining how the fill program works — revealing, however, that the present disposal franchise runs for 20 years, although it may be discontinued after 10 years by either the city or the contractor.

The circumstance that forced the adoption of the fill-and-cover method arose during the 1929 to 1932 period, when a court order put an end to the use of the city's badly overloaded incinerator. As a result of the order, the city directed the company disposing of the refuse to haul it to adjacent tidelands and cover it with earth. This method has continued since that time and will continue at least for another 10 years, probably longer.

The area San Francisco uses is covered with soft mud having a depth of at least 30 to 40 feet. At present, the city is able to transport the refuse to the area by railroad gondolas; however, this method will be abandoned because the railroad company dislikes having so much rolling stock tied up in this type of work. In the future the refuse collector probably will have to acquire added trucks and haul the refuse to the disposal area.

San Francisco's refuse has a weight of about 700 pounds per cubic yard and consists roughly of 23% combustibles, 27% non-combustibles, and 50% moisture. The average monthly collection is about 18,300 tons. The average collection per working day is about 710 tons with maximums occasionally running as high as 800 tons. The collection system is operated on a 310-day-per-year schedule. About 135,000 separate collections are made each week by trucks carrying an average of 3.4 tons per load. The Sanitary Fill Company, holder of the present disposal franchise, receives $1.10 per ton of refuse delivered at the railroad loading platform, or $0.90 per ton for refuse delivered at the fill site.

By ballot, the people of San Francisco expressed preference for refuse disposal using incinerators. However, also by ballot, they refused funds that would have made incinerator construction possible. So, as a compromise, the city adopted this huge, carefully planned land-fill operation.

The company builds the fill in several lifts, the top lift being brought to an elevation about 10 feet above the ultimate desired height in order to compensate for anticipated settlement. Each day's deposit is covered with earth and rock from a nearby quarry. Records indicate that about ¾ of a cubic yard of cover material is placed for each ton of garbage. This uses two feet of cover material for each 4 feet depth of garbage. During the last 10-year period, 53 acres of filled land was created.

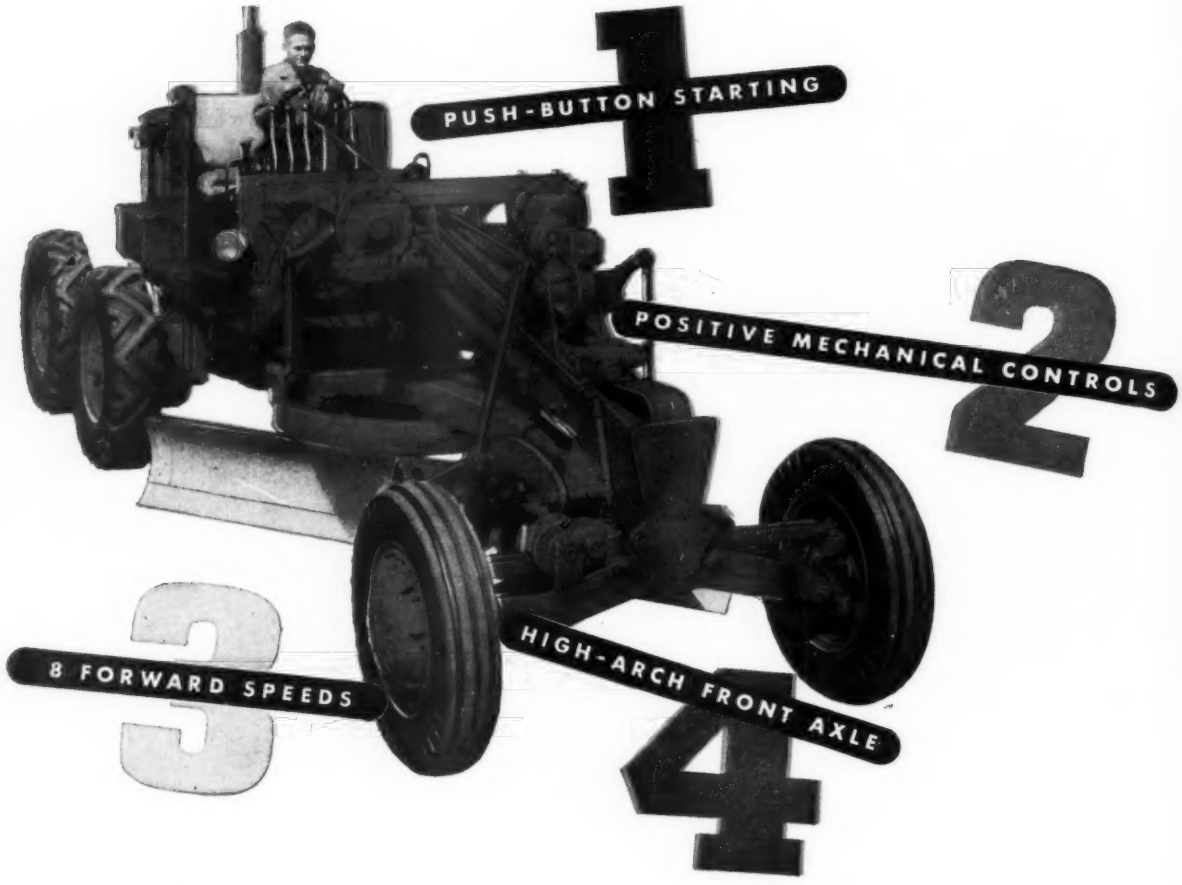
The land, while not suitable for many purposes, does command a commercial value. The Southern Pacific Co., which owns the property, has recently leased approximately 20 acres of the oldest part of the fill to four industrial concerns which are planning immediate improvements.

The fill subsidence has not been uniform. In areas filled between 1934 and 1940, the two-year subsidence varied from 0.6 to 3.9 feet with no apparent relation between the amount of subsidence and the age of the fill. Test pits dug in the fill to discover the present state of the refuse disclosed very little evidence of decomposition, although the uncovered garbage and refuse yielded a strong decomposing odor. The temperature of strata near the bottom of the pit was slightly higher than of that near the surface. Good roads and careful operation make the fill nuisance-free.

High Prices Cut Garbage Volume

REPORTS from refuse collection officials at the recent American Public Works Congress, held in Jacksonville, indicate that the amount of household garbage contributed per family has dropped greatly during the recent post-war period of high prices, much more than it did during the war with the coupon-rationing period.

William Xanten, City Refuse Superintendent, Washington, D. C., stated that this year the collections have reached a low of 129 pounds per capita annually as compared with 168 pounds in 1941, 141 pounds in 1943, and 134 pounds a year ago. Present-day garbage contains practically no meat scraps and consists chiefly of citrus rinds, carrot and beet tops, and coffee grounds.



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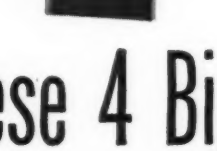


MOTOR GRADERS • LEANING WHEEL GRADERS • ELEVATING GRADERS

Street Construction & Maintenance

Perforated Clay Tile Standardized

THE solution of subgrade drainage problems took a forward step recently when the clay products and building supply trades accepted a voluntary standard for an improved design of perforated vitrified clay pipe according to the Bureau of Standards at Washington. The standard known as CS143-47 covers both standard and extra strength perforated clay pipe. The new pipe is identical with ASTM designations C13 and C200 with the addition of requirements for performations.

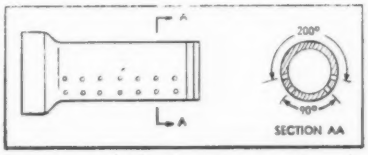
The new design was a result of the war experience of the U. S. Engineer Corps and highway officials, and features smaller holes scientifically placed to reduce infiltration of fine material into the line to a minimum. The location of the perforations is such that there is minimum interference with the structural strength of the pipe. Specifications for structural strength are identical for both perforated and non-perforated clay pipe.

Perforations in the new design are circular and cleanly cut, ¼ inch in diameter, and arranged in rows parallel to the axis of the pipe. The perforations are approximately 3 inches from center to center along the rows. The spigot end is unperforated for a length equal to the depth of the socket.

The rows are arranged in equal groups on either side of the vertical center line of the pipe and the total number of rows varies with the size of the pipe. The 4-, 6-, and 8-inch pipes have four rows of perforations; 10-, 12-, and 15-inch pipes have six rows; and 18-, 21-, and 24-inch pipes have eight rows.

Crushing strength of the new pipe increases with the size of pipe and the method of testing. When tested by the sand-bearing method, 4-, 6-, and 8-inch standard perforated pipes have a minimum average strength of more than 1,430 pounds per linear foot. Ten-inch standard pipe has a minimum average strength of more than 1,570 pounds per linear foot; 12-inch standard has at least an average strength of 1,710 pounds per linear foot; 15-inch at least 2,000 pounds; 18-inch at least 2,430 pounds; and 24-inch standard at least 3,430 pounds.

The crushing strength of extra-strength perforated clay pipe also increases with the size pipe. The sand-



bearing method of testing requires 6-, 8-, and 10-inch extra-strength pipes to withstand at least 2,850 pounds per linear foot. Twelve-inch extra-strength pipe will withstand 3,200 pounds per linear foot; 15-inch at least 3,925 pounds; 18-inch at least 4,700 pounds; 21-inch at least 5,500 pounds; and 24-inch at least 6,300 pounds. Each length of extra-strength perforated clay pipe bears the indented markings "ES."

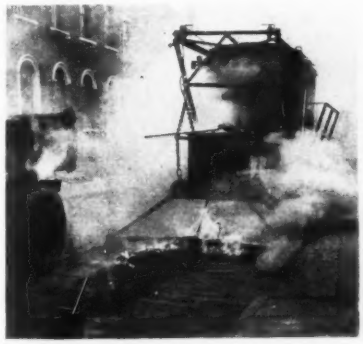
Aside from the crushing strength, the commercial standard covers definitions and requirements for materials, workmanship, finish, absorption, dimensions, and the resistance to action of acids.

Asphalt Street Gets New Life

WHENEVER an asphalt street in Cincinnati shows signs of deterioration in the form of cracks, checks, and other flaws, the City's Division of Highway Maintenance takes up the faulty layer and replaces it with new material. To remove the poor material, maintenance crews use a big asphalt heater that will take off about 250 to 300 square yards—an average ¾-inch depth—in an eight-hour day; then they replace the deteriorated material with a fresh sheet-asphalt top. The burned-away material is not totally lost, but is used for low-grade repairs of certain macadam streets or as a lining material for drainage ditches.

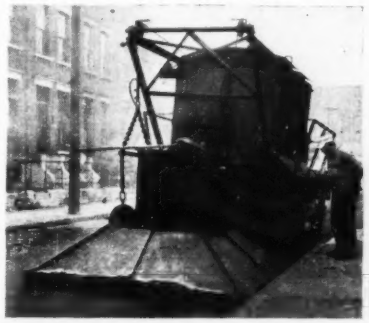
The burner was made in the Cincinnati shops, and uses a four-cylinder Wisconsin engine to drive the blower discharging into a fire-brick lined combustion chamber. The burner can use any of a number of grades of fuel oil.

The work comes under the direction of C. E. Brokaw, Superintendent, Division of Highway Maintenance, and under the general supervision of R. G. Sarvis, Director of Public Works.



The burner in action. Notice the windrow of softened asphalt.

Workmen skim off and remove asphalt.



The operator adjusts the burner over the pavement to be replaced.

The city's Galion tandem roller compacting the freshly laid asphalt.

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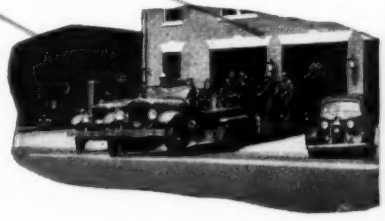

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Public Safety

The radio dispatcher of the Providence, R. I., Police Department records all incoming and outgoing calls on a recording-reproducing machine.

What Was Said Is On the Belt

AN INCREASING number of electronic devices are entering the municipal field. One that is on the verge of wide acceptance, whenever verbal orders, conversations, discussions, and agreements may later have to be recollected, is the recording-reproducing machine. It records for one-half hour on a plastic belt. Police are finding the method useful for taking down call-box talk and in questioning persons in distant locations.

One of these machines in the Providence, R. I., Division of Police has relieved the radio dispatcher of keeping a written record. Started by a voice-operated relay, the belt machine records all messages going out and coming in. This permits the dispatcher to give close to full time to the control of the patrolling force. Continuous recording is achieved by dual belts, the second starting 20 seconds before the first is filled. The recorded belt is removed, identified, and filed. Disputes between dispatcher and patrolmen are thus eliminated, and the spirit of the force is lifted by recognition of the need to speak clearly and accurately.

Some persons taken into custody charge later that they have been mistreated. The facts are quickly established where the situation was voice-recorded. Another protection is in the case of garbled calls by telephone, which, when on record, explain possible delayed response by the police.

These and many other benefits are bestowed by this instrument at a total cost of about 60 cents a day. General or specific information will be sent by Dictaphone Corporation, New York 17.

Contracts for Fire Protection Service

ST. PAUL, Minn., recently contracted to furnish fire protection to West St. Paul for one year for $10,000 and to Mendota township for 90 days at the rate of $200 for each hour or fraction thereof per engine. The St. Helens, Ore., council recently approved a contract with the newly formed rural fire protection district adjacent to the city, under which the district this year will pay the salaries of two firemen and half the salary of the city fire chief. They will also reimburse volunteers used in fighting fires outside the city limits. In succeeding years, the district will pay half the cost of the city fire department, except for station upkeep. A mutual-aid provision allows each unit to borrow equipment from the other but requires a $15 payment for the use of trucks.

The village of Cook, Minn., will furnish fire protection to the townships of Field and Owens at the rate of $25 per call. By recent agreement with an adjacent rural fire protection district, Monmouth, Ore., will care for district equipment and will use it for fire-fighting within the city limits when it is not needed outside the city. City volunteer firemen will fight fires outside the city at the rate of $6 for two men for the first hour, $2 for each additional man, and $3 for each additional hour. The Newberg, Ore., fire department has stopped answering calls outside the city limits.

Air Chamber Prevents Bursting Hose

FIREMEN entering burning buildings with hose often shut off the nozzles while they stop to hack, chop, or travel from room to room. Many have lost their lives when the water pressure burst the hose, leaving the firemen stranded without any means of protection.

A new device, a sealed air chamber, which will protect firemen from this serious hazard, has been developed at the Northwestern University Technological Institute. The sealed air chamber reduces the pressure wave of water inside a fire hose when it is shut off at the nozzle. The device, a metal cylinder about a foot in diameter and from 9 to 18 inches high, is connected to the fire-truck pump. Inside, the chamber à bellows, in a pocket of compressed air, is filled with water forced in from the hose or pipe. When the nozzle or valve is closed, the pressure wave rushes into the bellows and is cushioned by the compressed air.

Tests have shown that the chamber reduced pressure from 1,125 pounds to 175 pounds per square inch when water pumped at the rate of 200 gallons a minute through a 2-inch pipe 85 feet long was stopped by a fast-closing valve. Tests indicate that the chamber will outlast any part of the pipe or hose system to which it is attached.

The sealed air chamber also will improve the efficiency of automatic fire-protection sprinkling systems by preventing the possible bursting of sprinkler-valve heads in parts of the building untouched by fire and thus damaging valuable stocks. Two recent city fires were cited as examples in which such occurrences caused damage as high as $200.00. The sealed air chamber will eliminate this inadequacy in the automatic sprinkling system.

BRIDGEPORT DURONZE*

FOR WATER METERS

Photo Courtesy
Hersey Manufacturing Company
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For Longer Life and Reduced Maintenance

To reduce maintenance costs, a necessary evil since meters must be periodically opened for cleaning and adjustment, the Hersey Manufacturing Company, for a number of years, has standardized on Duronze bolts and nuts for their water meters in the domestic sizes.

Duronze bolts and nuts average about 90,000 p.s.i. in tensile strength, and are considerably stronger than those made from steel or brass. They are non-rusting and have great resistance to season or stress corrosion cracking. Bolts are made from hard drawn Duronze (silicon bronze) wire by the cold heading and rolled threading process.

Acorn nuts are machined from Duronze III rod (silicon aluminum bronze) which is about 9% lighter in weight than brass. After assembly the bolts and nuts do not "freeze" and can be used over and over again, saving much maintenance time and material.

Duronze modern engineering alloys have done much to improve products and prolong their useful service life. Water company and city engineers should insist on the use of Duronze alloys where corrosion and wear take their toll of inferior metals. We do not make bolts or nuts but supply wire, rod, tubing and strip to manufacturers. Consult our Technical Service Department and write for your copy of the Duronze manual. **Trade-mark Reg. U. S. Pat. Off.*

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Duronze Alloys—PRODUCTS OF

BRIDGEPORT BRASS

Airports and Aviation

No Red Ink Used at Sky Harbor

SKY HARBOR, Phoenix's municipal airport, takes its place among those municipally operated aviation services that are carrying their own weight as far as operations are concerned. Last year this Arizona airport earned $53,842.22, according to Airport Manager Walter P. Fulkerson.

Principal customers of Sky Harbor are operators of transient aircraft. Operators are not charged fees, but are required to purchase their oil and gas from the city. There is no landing fee for non-scheduled aircraft of any type and no tie-down fee. Transient aircraft at Sky Harbor account for around 62% of the gasoline sold, Fulkerson declared.

The restaurant operated by Sky Chefs at the airport, an airline subsidiary, pays the city 6% of the gross receipts, 2% of the payment being in cash and 4% going to amortization of the building's cost.

American Airlines and TWA have 15-year agreements with the city providing landing fees of $37.50 each for the first two flights and $12.50 for each flight thereafter, "as scheduled on the first day of each month."

Horsepower is the determining factor for hangar-space charges. The schedule is $18 monthly for 0 to 86 hp; $20.50 for 86 to 186 hp; $23 for 186-450 hp; $30 for twin-engine craft of the Cessna type, and $50 for twin-engine Beechcrafts.

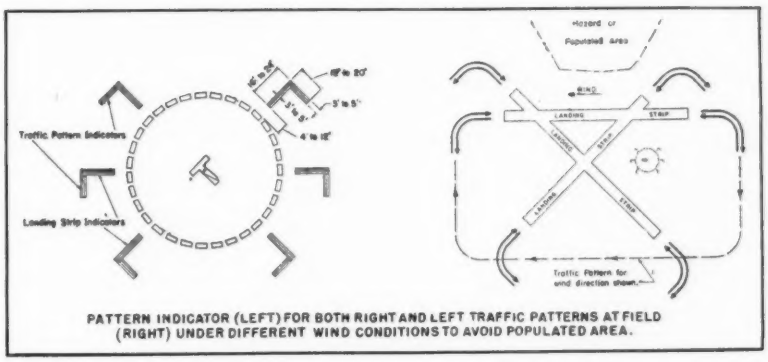
The chief source of revenue for the municipally owned airport is gasoline and oil sales, which totaled $163,001.39 for the fiscal year of 1946.

Fourteen Men Too Many

THE AMERICAN CITY story, "Airports Out of the Red" (August 1947, page 15), had J. Victor Dallin, Chief of Philadelphia's Bureau of Aeronautics, making a hurried review of the number of men employed at the city's Northeast and Southwestern airports.

According to the International City Managers Association, these two ports were recorded with 97 employes. Actually, the Northeast Airport, with no scheduled airlines operations, has 30 employes, and the Southwest Airport, which has both scheduled and non-scheduled operations, has 53.

The extra 14 men, says Mr. Dallin, he simply doesn't need.



PATTERN INDICATOR (LEFT) FOR BOTH RIGHT AND LEFT TRAFFIC PATTERNS AT FIELD (RIGHT) UNDER DIFFERENT WIND CONDITIONS TO AVOID POPULATED AREA.

New Markers for Airport Traffic Patterns

A NEW airport marker system has been developed by the Civil Aeronautics Administration which will make landings at unfamiliar fields safer and easier.

The basic element of the "segmented circle" markers will be a circle of 100 or more feet in diameter made of panels 6 to 12 feet in length and 4 feet wide separated by about one-fourth of the length of each panel. The segmented circle will be visible from several thousand feet and will immediately indicate to the pilot the wind direction, the direction of the runways, and which runway is currently in use. Any unusual traffic patterns at the airport, or the fact that the airport is closed, will be evident at a glance.

The landing direction tee, tetrahedron, or arrow will be in the middle of the circle, with the wind cone on top. At fields where the landing strips are not self-evident, radiating panels outside the circle will show the location of the runways. A closed field will be indicated by panels in the center of the circle forming a cross.

The segmented circle markers will be installed at all airports constructed under the Federal Airport Act and at all airports with right hand traffic patterns (the left-hand traffic pattern is standard in the United States).

Oakland Airport Gets Access Improvement

A FAST direct route to the Oakland, Calif., Municipal Airport, focal point of many trans-Pacific and transcontinental airlines, and to the Southern Alameda County highway system will be provided to residents of the San Francisco Bay area and the cities of Oakland and Alameda by Doolittle Drive, a new two-mile extension dedicated August 10, according to Claire V. Goodwin, president of the Oakland Board of Port Commissioners.

Named for General James A. Doolittle, who is a native of Alameda, this highway, which was constructed by the Board of Port Commissioners, will skirt the edge of the Airport along San Leandro Bay and Airport Channel. It will join Hagenberger Road and, eventually, the new six-lane, high-speed Eastshore Freeway now being constructed at a total cost of $8,500,000 between the eastern San Francisco-Oakland Bay Bridge approach and the City of San Jose. It replaces Maitland Drive, the former route from Alameda, to and around the airport, which was closed during the war due to expansion of the field and the installation of a new runway.

The new section of road is an extension of the portion of Doolittle Drive constructed by the state nearly two years ago, for the Navy's wartime use, with funds advanced by the Federal Public Works Administration, the City of Alameda, and the Oakland Board of Port Commissioners. The government contributed $178,000 to that project, Alameda and the Port $10,000 each.

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- require less servicing
- last much longer

You can drill more footage per shift . . . and your drills will last longer, require less servicing . . . when you use Texaco Rock Drill Lubricants E.P.

Texaco Rock Drill Lubricants E.P. are especially made to keep rock drills working at their best. Their "extreme pressure" characteristics are more than ample to protect moving parts even under the severest conditions. They resist oxidation, flow readily, prevent rust and corrosion whether drills are running or idle.

Texaco Rock Drill Lubricants E.P. are approved by leading rock drill manufacturers. Use the grade recommended for your particular drills and operating conditions.

A Texaco Lubrication Engineer will gladly work with you. Just call the nearest of the more than 2500 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

KEEP COMPRESSORS EFFICIENT

Assure clean valves, free rings, clear ports and air lines by lubricating with *Texaco Alcaid, Algol or Ursa Oil.* A Texaco Lubrication Engineer will gladly recommend the right one to assure the most efficient, economical compressor operation.

TEXACO

TEXACO Rock Drill Lubricants E. P.

TUNE IN . . . TEXACO STAR THEATRE presents the TONY MARTIN SHOW every Sunday night. • METROPOLITAN OPERA broadcasts every Saturday afternoon.

Stop—Check and Mail

Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write direct to the manufacturers, or circle the identifying numbers on his coupon and mail it to The American City Magazine, 470 Fourth Ave., New York 16. We will see that catalogs are sent to you without expense or obligation.

12/47

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Name ..... Position .....

Address .....

Mobile Unit for Cleaning Septic Tanks

252 The Odorless Sanitary Cleaner, OSC, is a completely self-contained unit for cleaning cisterns, vaults, and septic tanks. Equipped with a centrifugal Gorman-Rupp sewage pump that is non-clogging and self-priming, the unit is provided with a tank and fittings ready to mount on a standard truck chassis of 158 to 161 inches. For literature, write The Gorman-Rupp Co., 343 N. Bowman St., Mansfield, Ohio.

Highway Crossing Signals

253 Automatic operation of Model 10 railway-highway crossing signals has established a record of not a single fatality due to operation failure since the inauguration of these signals in 1936. For information about this method of permitting fast flow of rail and highway traffic, write for Bulletin G1L-AC12, Western Railroad Supply Co., 2406-2436 South Ashland Ave., Chicago 8, Ill.

How to Use Steel Forms For Walls, Floors

254 The Irvington Form & Tank Corp., Irvington, N. Y., will send you booklets covering the many ways Atlas Speed wall and floor forms are used, with detailed progress pictures and actual job photographs.

High-Visibility Dial on Parking Meters

255 One of the important features of the Mark-Time parking meter, aside from accuracy and split-minute precision, is its high-visibility dial. With a quick glance, the motorist knows exactly how much time he has left, and the patrolman knows which meters are overparked. For information, write M. H. Rhodes, Inc., Hartford 6, Conn.

Reflectorize Signs in Place

256 The Prismo Safety Corp., Huntingdon, Pa., will send you Bulletin No. 547, describing this company's method of reflectorizing signs in place within a few minutes. The sign will be visible either day or night. Besides signs, the equipment will reflectorize safety islands, underpasses, concrete abutments, guard rails, and barricades.

Aluminum Scaffold Can Be Carried Away

257 The Up-Right scaffold, made of aluminum alloy, is light enough to be picked up and carried away. Each section can be assembled in one minute, with no loose parts, and each section folds flat. It is invaluable for municipal jobs that require height, stability, and rapid assemblage. For a descriptive circular, write Up-Right Scaffolds, 612 Bank of America Bldg., Berkeley 4, Calif.

Self-Contained Paving Breaker Has Gasoline Hammer

258 The Syntron is a self-controlled gasoline hammer paving breaker that can be used for breaking, cutting, digging, driving, and tamping. Write for illustrated folder to the Syntron Co., 430 Lexington, Homer City, Pa.

History of Traffic Accidents

259 *Evidence on America's Fatal Streets* is the title of a booklet that is being offered by The Street & Traffic Safety Lighting Bureau, 155 E. 44th St., New York 17, N. Y. It tells not only what causes most night traffic accidents, but how they can be prevented.

Copper Service Couplings

260 The McDonald Diamond Line of brass goods includes copper service pipe couplings with male iron pipe thread on one end for pipe sizes of ½, ¾, 1, 1¼, 1½, and 2 inches, and couplings with female iron pipe thread on one end and for copper service pipe at both ends. Write the A. Y. McDonald Mfg. Co., Dubuque, Iowa.

Power Spraying Equipment

261 The F. E. Myers & Bro. Co., Ashland, Ohio, has recently issued a catalog which gives details of the company's complete line of power spraying equipment. Information may also be obtained relative to the company's water systems, pumps, and cylinders.

Bronze Memorials

262 A new 6-page folder showing styles and sizes of bronze plaques suitable for war memorials and all other municipal purposes may be obtained without charge from The Michaels Art Bronze Co., Covington, Ky.

Motor Street Sweeper Has Short Turning Radius

263 One of the important details of the Wayne motor sweeper is its short turning radius, which makes narrow streets, corners, traffic islands, and parked cars no obstacle to obtaining clean-swept streets. The water-spray system has a 160-gallon capacity tank. For literature, write the Brown-Bevis Equipment Co., 4900 Sante Fe Ave., Los Angeles 11, Calif.

Coin Handling Machines Step Up Accuracy

264 There are two important advantages to be obtained through the use of coin counting, sorting, and wrapping machines: a distinct saving in labor and time, and absolute accuracy. For information about any type of coin handling machines, write the Abbott Coin Counter Co., 143rd St. & Wales Ave., New York 54, N. Y.

Compound Water Meter Records on a Single Register

265 The Pittsburgh-Empire Compound meter records the results of both the velocity and displacement metering units on a single register, speeding meter reading and eliminating the possibility of error. Write for Bulletin W-803, Pittsburgh Equitable Meter Div., Rockwell Mfg. Co., Pittsburgh 8, Pa.

Study on Greases

266 Considerable laboratory work has been done to aid in more intelligent selection of greases to be handled in a given dispensing system, and also in the relation of the pumpability of greases to apparent viscosity. The subject is presented comprehensively as *Flow Properties of Lubricating Greases—Relationship of Apparent Viscosities* in the December issue of *Lubrication*, available without cost from The Texas Co., 135 East 42nd St., New York 17, N. Y.

Locate Leaks Without Digging

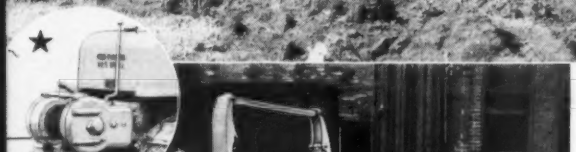
267 Operating like an over-sized stethoscope, the Globe Geophone enables an operator to locate escaping water or steam even when 50 to 75 feet from the leak. For information, write Dept. Y, Globe Phone Mfg. Corp., Reading, Mass.

(*Continued on Page* 23)

VERSATILE WORKER

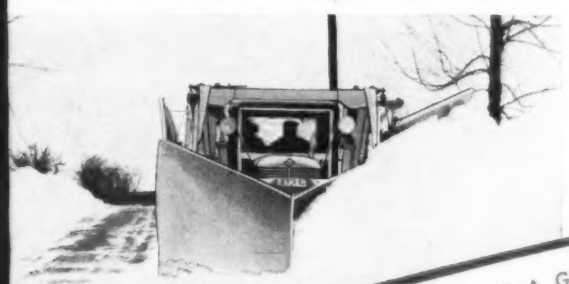
HD-5 with Tracto-Shovel and Gar Wood scraper. Interchangeable attachments for shovel include bulldozer blade, ¾ and 1 cu. yd. material handling bucket, bucket teeth, 2 cu. yd. snow loader bucket, V-type snow plow.

Scraper hydraulic system shown is optional. Can be operated with shovel system.



HD-5 with Baker bulldozer and Carco winch.

HD-5 with Gar Wood scraper and bulldozer.



HD-5 with Baker snowplow.

NEW ALLIS-CHALMERS HD-5

IS NOT JUST A DRAWBAR TRACTOR.. NOT JUST A BULLDOZER TRACTOR..

IT'S ENGINEERED TO WORK WITH EQUAL EFFICIENCY PULLING, PUSHING OR LIFTING!

- There's more weight — approximately 11,000 lbs. — properly distributed for better balance.
- There's extra stability and better footing with more track on the ground — 64¼" on standard, 77¼" on shovel model.
- There are larger front idlers, and both idlers and sprockets are closer to ground — means less bobbing, smoother, more accurate operation on bulldozing, snow plowing, shovel work.
- There's FULLY MATCHED auxiliary equipment — each Allied manufacturer, skilled in his own field, works in complete cooperation with Allis-Chalmers engineers in the development of HD-5 auxiliary equipment.

A GREAT TRACTOR WITH A GREAT ALLIED LINE!
37.5 drawbar hp. GM Diesel engine. 5 forward speeds, up to 5.47 m.p.h.; reverse 1.99 m.p.h.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Stop--Check and Mail

Use Coupon on Page 21

Parking Meters Register to 10 Hours

268 The Park-N-Lot meter is designed for off-street parking in municipal parking lots and registers up to 10-hour periods. A steady source of municipal income with low initial and maintenance costs, the parking lot is a convenient service to the community. For details, write the Magee-Hale Park-O-Meter Co., Commerce Exchange Bldg., Oklahoma 2, Okla.

Load 5 Cubic Yards of Snow In 15 Seconds

269 The Bros Sno-Flyr, a rotary snow plow with dual-rotor, can fill a 5-cubic-yard truck in 15 seconds. On either a 170- or 275-hp motor, the Sno-Flyr features the exclusive Bros feeder-rake with vertical and forward action. For information, write the Wm. Bros Boiler & Mfg. Co., Minneapolis 14, Minn.

Repair of Concrete Structures

270 Expensive repair work can often be avoided if use is made of the guniting process before irreparable distintegration has occurred. This method of firing cement out of a hose or "gun" is described in literature distributed by the Gunite Concrete & Construction Co., 1301 Woodswether Rd., Kansas City 6, Mo.

Garbage and Waste Incinerators

271 Bulletin 111 describes Morse Boulger's mechanically stoked incinerator; Bulletin 110, cell-and-hearth-type incinerator; Bulletin 114, multi-zone furnace. Details indicating how to eliminate ineffective, offensive waste-disposal plants through the use of these types of equipment are graphically illustrated. Write Morse Boulger Destructor Co., 205-R East 42nd St., New York 17, N. Y.

Attachments on Front or Rear Of Motor Grader

272 All-Wheel drive and All-Wheel steer make it possible to mount an attachment ahead of or behind the 99-H power grader because the machine may be driven and steered with either front or rear wheel. This is a feature of the motor graders of the Austin-Western Co., Aurora, Ill.

Electric Duplex Calculator

273 Information about its new electric duplex calculator may be obtained by writing to the Burroughs Adding Machine Co., Detroit 32. Mich. In addition to this latest development, Burroughs will send upon request data on any of its complete line of office machines.

Modernize Your Incinerator

274 Incinerators may be brought to peak efficiency by modernizing them with Nichols Monohearth cone and stoking arms. If your municipality is planning the construction of a new refuse disposal plant, investigate Nichols Monohearth mechanically stoked refuse incinerator. Information may be obtained from the Nichols Engineering & Research Corp., 60 Wall Tower, New York 5, N. Y.

If Water Pipe Is Clogged, Clean It

275 The National Water Main Cleaning Co., 50 Church St., New York 7, N. Y., can remove sediment, incrustation, and tuberculation from the interior of pipe, restoring the pipe to its original carrying efficiency. Write for details of method and results.

Drying Equipment for Sewage Disposal Plants

276 The General American Transportation Corp., 10 E. 49th St., Dept. 830b, New York 17, N. Y., will send you information about its dewatering and drying equipment, Conkey sludge filters and Louisville rotary dryers, as well as data on screening dryers, sludge gas holders, garbage dryers, hydro-separators, storage and water tanks, turbo-mixers, thickeners, steel-alloy platework, and steel stacks.

Architectural Glass Blocks Give Light to Working Areas

277 PC glass blocks provide diffused daylight which can be directed to remote working areas. They possess insulating qualities that reduce heating and air-conditioning costs, and form a solid, translucent wall which insures privacy and imparts a modern appearance to buildings. Literature may be obtained from the Pittsburgh Corning Corp., Room 690, 632 Duquesne Way, Pittsburgh 22, Pa.

Insure High-Quality Concrete With These Vibrators

278 You can get the benefit of economy and high strength that a harsh concrete mix can furnish while avoiding excessive voids and honeycombing by vibrating the concrete. Departments concerned with street, reservoir, and other concrete construction will be helped by information from the Electric Tamper & Equipment Co., Ludington, Mich., on its line of concrete vibrators. One of the units that is ready for immediate delivery is the FS-7A electric concrete vibrator. It takes any standard head up to 2⅜ by 18½-inch, with flexible shafting in 24-inch to 14-foot lengths. Delivers up to 10,000 vpm on A.C. or D.C., 110 to 120 volts.

One-Man Operation on Sewer-Cleaning Machine

279 The O'Brien electric Root-Master, equipped with a new OB Cable-Saver that minimizes cable breakage by absorbing torque on a special built-in inner wheel, is designed for one-man operation. The machine removes roots, sediment, and other obstructions without digging. Write for illustrated folder to the O'Brien Mfg. Co., 5016 No. Austin Ave., Chicago 30, Ill.

Crawler with Trailer Converts to Many Jobs

280 The No. 60 Schramm crawler is fitted with its own trailer for rapid transportation to job sites. The machine may be fitted with attachments for use as a bulldozer or lawnmower and for trench digging, tie tamping, spraying, paving demolition, and other municipal jobs. Write Schramm Inc., West Chester, Pa., for Bulletin FC-48.

Copper Settings for Water Meters

281 For a catalog and sample of the Ford Copperhorn setting for ⅝-inch, ¾-inch, and 1-inch water meters with all copper water way, write The Ford Meter Box Co., Inc., Wabash, Ind.

Bonderized Metal Traffic And Street Signs

282 For a catalog describing the Miro-Flex stock of Bonderized metal signs—embossed, plain, or reflectorized with glass or Lucite buttons—write the Miro-Flex Co., 1824 East Second St., Wichita, Kans. The signs come in various sizes, with a large number of stock legends.

If You Use Well Supplies, Get This Literature

283 You generally get, say Layne engineers, more water than you bargain for when you install a Layne well water supply unit. Each is designed to produce the maximum amount at a minimum of cost. Many exceed the Layne guarantee thus giving the purchaser an unexpected bonus. If your city needs more water, Layne engineers will provide dependable water development recommendations at no obligation. For literature, address Layne and Bowler, Inc., General Offices, Memphis 8, Tenn.

Recondition Small Mains In Place

284 The Pittsburgh-Eric process is a method of reconditioning water mains from 3 to 24 inches in place. The method consists of cleaning the main, removing any incrustations, and coating the metal with Lectumen, which protects the pipe from underlying deterioration and helps it resist organic accumulations. Write for data to the Pittsburgh Pipe Cleaner Co., 133 Dahlem St., Pittsburgh 6, Pa.

Pliable Pipe Impervious to Settlement of Over-lying Earth

285 Streamline service pipe (type K) is uniformly soft and pliable so that settlement of filled earth, water mains, or buildings have little or no effect upon it. Since copper does not rust or scale, there is an added economy in the elimination of many repairs, at the same time insuring accuracy of meter discs and chambers. For information, write the Streamline Pipe and Fittings Div., Mueller Brass Co., Port Huron, Mich.

Light Earth Borer for Service Pipe

286 The new hand-held Model LHH-2 Hydrauger bores a 2-inch open hole 30 to 50 feet and reams to 3½ and 4½ inches. Made small and light enough for operation by one person, the machine is suitable for running service leads. For a catalog, write the Hydrauger Corp., Ltd., 116 New Montgomery St., San Francisco 5, Calif.

Power Sewer Cleaner Keeps Sewers Open

287 The OK Champion power sewer cleaner removes roots, dirt, sand, and other debris up from the main in one continuous operation. All men work above ground. For complete details, write the Champion Corp., 4716 Sheffield Ave., Hammond, Ind.

Packaged Float Switch Ready to Install

288 The Standard L-200 float switch, manufactured by the Automatic Control Co., 1015 University Ave., St. Paul 4, Minn., comes packaged, ready to install. It is two-pole, double-break, snap-back, with silver-to-silver contacts.

Snowplow Serves as Earth Grader

289 The Bolens Huski snowplow, which may be used during warmer seasons for light grading work, is mounted on two rubber-tired wheels and has a curved steel blade which is 42 inches wide and about 21 inches high. For working in deeper snow, cast iron wheel weights may be attached to the wheel hub or disc. For literature, write the Bolens Products Division, Food Machinery Corp., Port Washington, Wis.

(*Continued on Page 25*)

. . . . yours for the asking . . . .

A two-color four page leaflet . . . just off the press . . . highlighting the mechanical and operating details of the new Dorr Duo-Clarifier and Dorrco Duo-Filter. Write for your copy now.

DORRCO

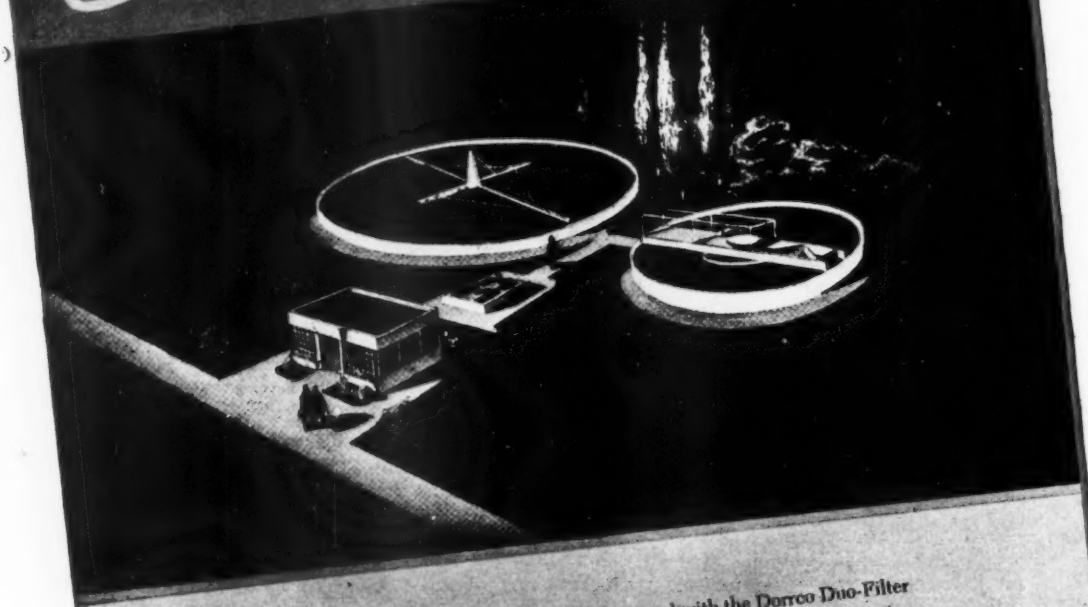
Small scale Biofiltration

with the

DORR DUO-CLARIFIER

and the

DORRCO DUO-FILTER



The Dorr Duo-Clarifier, combined with the Dorrco Duo-Filter and pumping units, provides complete two-stage Biofiltration treatment in two structures instead of the usual four. The Duo-Clarifier provides primary and secondary sedimentation in one structure and the Duo-Filter, with first and second stage filters concentrically arranged, provides two-stage filtration in a second single structure. One Clarifier mechanism and one Rotary Distributor are the only items of equipment necessary, aside from pumps and a digester.

Leaflet No. 7312

THE DORR COMPANY

Engineers — 570 LEXINGTON AVENUE, NEW YORK 22, N. Y.

OTHER ADDRESSES ON BACK COVER

Stop--Check and Mail

Use Coupon on Page 21

Measurements of Water And Sewage

290 The Bailey Meter Co., Cleveland 10, Ohio, will send upon request Bulletin 233, which describes the company's area meter for the measurement of fluid flow: water, chemicals, distillates, refrigerants. Included in the folder is a chart of transmitter data.

Piston Crown Temperatures Can Be Reduced

291 Because the lube oil supply is extended to the topmost piston ring by pressure circulation in the Superior diesels, temperatures of piston crowns and rings are appreciably lower than might otherwise be possible. For an explanation, write for *Superior Stationary Diesel Engines*. The Superior Engine Division of The National Supply Co., Springfield, Ohio.

Plumbers' Sewer-Cleaning Tools

292 A new, completely illustrated, 16-page catalogue covering the latest advancements in plumbers' sewer-cleaning equipment has just been published by the Plumbers' Tool Division of Flexible Sewer-Rod Equipment Co., 9059 Venice Blvd., Los Angeles 34, Calif. Among the items listed and described are electric power cleaners, plumbers' sets, rod tools or cutting heads; rod couplings, adaptors, snakes, snake guns and houses, and closet augers.

Parking Meters Must Be Accurate

293 If you want to keep your citizens happy, be sure your municipality's parking meters are not cheating them. Accuracy in metering is one of the prime requisites. For data about its products, write the Karpark Corp., Cincinnati 6, Ohio.

One-Man Operation Of Snow Loader

294 The Sno-Loder, which can be towed at a speed of 45 miles per hour, is operated by only one man. One of the features of the mechanism is its construction, which permits loading of the truck to be done evenly: the load distributor chute, controlled by a lever, is adjusted so that the snow falls first at the front of the truck, then to the rear. Spillage and clean-up operations are avoided. For illustrated folder, write the Pneu-Hydro Road Machinery Co., Division of General Sales Co., Cadillac, Mich.

Reduce Rates with Peak-Producing Generators

295 Power generators that work on a minimum of fuel to produce a maximum of power are going to reduce the cost of electricity to your citizens. You may be interested in investigating the diesel power plants produced by the Nordberg Mfg. Co., Milwaukee 7, Wis.

See That Play With Correct Lighting

296 Night games held in municipal stadiums and arenas bring in extra revenue, provided that the audience knows it will be able to see what is going on. For information about Crouse-Hinds long-range floodlight for use where the lighting towers are at a distance from the playing field and the company's Type MUA Alumalus floodlight for general sports lighting, write the Crouse-Hinds Co., Syracuse 1, N. Y.

Motor Grader Has 8 Forward Speeds

297 The Adams motor grader has 8 overlapping forward speeds that permit the operator to work at a rate most efficient for each particular type of job; transport speeds up to 21 mph are obtainable. For information, write J. D. Adams Mfg Co., Indianapolis 6, Ind.

Detachable Truck Bodies Speed Rubbish Collection

298 A single truck-hoisting unit can service several Dempster-Dumpster detachable truck bodies used for stationary rubbish depositories. By using this system you can cut the expense of motor rolling stock and still maintain flexibility of service. For information, write Dempster Brothers, Inc., 3117 Springdale, Knoxville 17, Tenn.

Garbage Disposal by Sanitary Fill

299 One of the most economical methods of refuse disposal is through the use of a sanitary fill. For this method, a Drott bullclam shovel can be used to advantage, since this mechanism handles all operations: digs the trenches, compacts and covers the refuse. For a catalog, write the Drott Mfg. Corp., 4344 N. Green Bay Ave., Milwaukee 12, Wis.

Get Paid For the Water You Pump

300 Don't pump water and then fail to be paid for it. Don't let inaccurate water meters rob you of an earned revenue. If one of your problems is loss of revenue because of "unaccounted-for" water, be sure to obtain information about the Badger water meters. Write the Badger Meter Mfg. Co., Milwaukee 10, Wis.

Insecticides and Fertilizers for Park Maintenance

301 The Doggett-Pfeil Co., Springfield, N. J., will send its *Guide to Better Gardening* to municipal officials interested in insect control or park maintenance. The booklet includes a description of the company's line of insecticides and special fertilizers.

Altitude Valves

302 Altitude valves for tank and reservoir with two sets of controls, automatic-hydraulic for normal operation and electric-remote for emergency take-over, are manufactured by the Ross Valve Mfg. Co., Inc., P. O. Box 596, Troy, N. Y. For information about the various models, write the company.

Street Lighting Should Be Planned

303 Streets without modern lighting are a definite source of accidents unless nighttime visibility is improved by a good lighting program. For information about G-E's products and consultation policy, write the Apparatus Dept., General Electric Co., Schenectady 5, N. Y.

Rubber Joints for Sewer and Water Installations

304 Tylox rubber joints for coupling in sewer, irrigation, siphon, and pressure pipe installations are described in a new bulletin which may be obtained by writing to Mr. T. S. Rowe, President, The Hamilton Kent Mfg. Co., Kent, Ohio.

Five Joints For Cast Iron Pipe

305 Five joints supplied with mono-cast centrifugal pipe will meet most engineering and installation needs: the doublex-simplex, the screw-gland, the roll-on-rubber ring, the standard bell-and-spigot, and the Molox ball-and-socket, which is an exclusive Acipco development. For information about which type is best for a project that your municipality is constructing, write the American Cast Iron Pipe Co., Birmingham 2, Ala.

Street Lights To Fit the Street

306 One of the most important parts of street luminaires is the refractor, for it is the refractor that adapts the light to the street and provides the best light for the motorist according to the type of street, standard, and bulb. For information, write the Holophane Co., Inc., Street Lighting Dept., Newark, Ohio.

General Maintenance Jobs

307 General maintenance jobs of snow removal, weed and grass cutting, hauling, and sweeping around municipal plants and grounds may be done at low cost with the Flink-Rawls S-2 mower or T-2 tractor with attachments. These relatively inexpensive basic machines, which may be adapted for a variety of jobs, are described in an illustrated folder that may be obtained by writing to the Flink Co., Streator, Ill.

Biofiltration on a Small Scale

308 A new leaflet describing the mechanical and operating details of the new Dorr Duo-Clarifier and Dorrco Duo-Filter use in sewage treatment is available from The Dorr Co., 570 Lexington Ave., New York 22, N. Y. Leaflet No. 7312 describes this method of complete two-stage biofiltration treatment which is practicable for the smaller plant.

Expanding Root Cutter Fits Sewers from 8 to 30 Inches

309 The Expanding Root Cutter and Sewer Cleaner may be adjusted in 30 seconds to fit any size sewer from 8 to 30 inches. It removes roots and caked sediment, cleaning the sewer wall, top, and sides as well as the bottom. For a catalog, write the Expanding Sewer Machine Co., 108 East Walnut St., Nappanee, Ind.

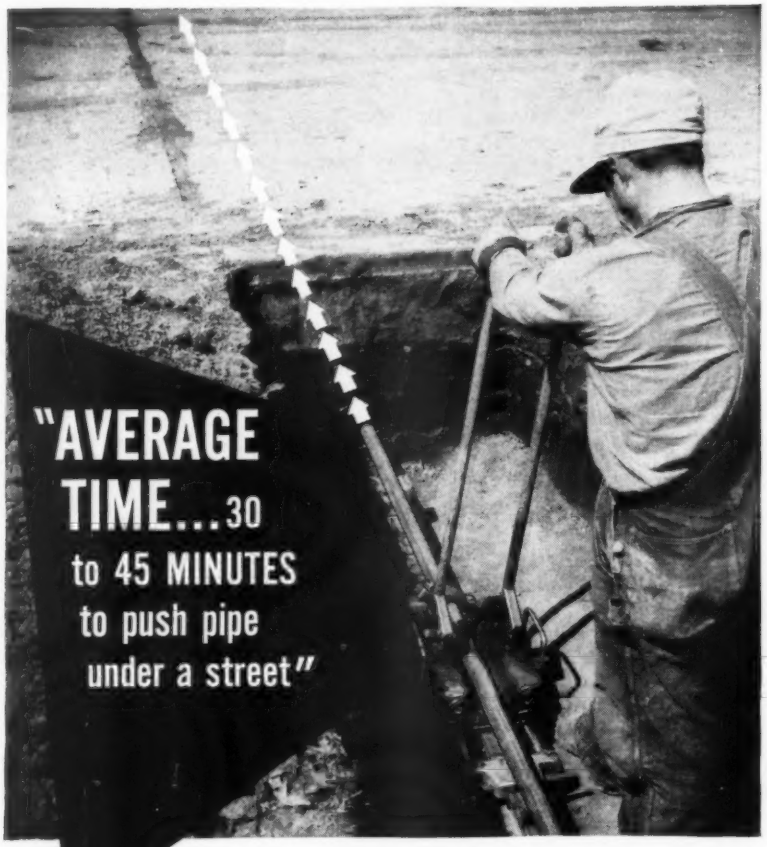
Time Delay on Traffic Signals Cuts Accident Frequency

310 The Agastat is a time delay mechanism that may be adjusted to periods from a fraction of a second to minutes. It has been found effective in cutting down vehicular accidents by showing a red light momentarily to both intersections and preventing cars from shooting ahead as soon as the light changes. An illustrated folder is available from the American Gas Accumulator Co., 1030 Newark Ave., Elizabeth 3, N. J.

Trucks Specialized To Fit the Job

311 For information about International truck specialization—the company's analysis of the jobs required of the truck you buy and the recommendations of the type of truck you should have, made as a result of such analysis—write the Motor Truck Div., International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

(*Continued on Page 26*)



...with a GREENLEE HYDRAULIC PUSHER

"Our GREENLEE Hydraulic Pipe Pusher is used on all of our under-street installation jobs...doing on the average, in 30 to 45 minutes, what it takes two men an entire working day to do by trenching," reports Iowa Power and Light Co., Des Moines, Iowa.

Such performance means real efficiency, real savings... does away with tearing up pavement, extra labor, re-routing traffic, and payment of fees for opening pavement.

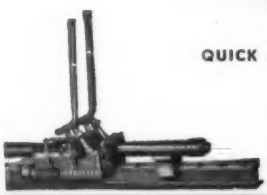
You, too, can speed up piping installations, cut costs with a GREENLEE Hydraulic Pusher. With it one man *pushes pipe* under streets, railways, walks, lawns, flooring and other obstacles.

You eliminate extensive ditching, as just a short trench accommodates the pusher... no tearing up of concrete, lawns, floors... no back-filling, tamping, tunneling, repaving.

Get facts and figures on the time-saving GREENLEE which often pays for itself on the first few jobs. Write Greenlee Tool Co., Division of Greenlee Bros. & Co., 2032 Columbia Avenue, Rockford, Illinois.

TOOLS FOR CRAFTSMEN

GREENLEE



QUICK FACTS ABOUT THE GREENLEE HYDRAULIC PIPE PUSHER

Easy — one or two men can easily operate on any job. *Portable* — compact, easy to carry to job and set up. *Fast* — operates at six different speeds. *Two models* — (1) for pipe up to 4-inch; (2) for larger pipe, drainage ducts, concrete sewer pipe. Do the job easier, quicker with a GREENLEE.

Check and Mail

Use Coupon on Page 21

Sewage Treatment Equipment

312 The American Well Works, 100 North Broadway, Aurora, Ill., will send you literature on the following types of sewage treatment mechanisms: grit channels and settlers, Bulletin 249; sludge collectors, No. 253; aerators, No. 254; rapid mix turbine and Downflo flocculation units, No. 255; rotary distributors, No. 257; mechanically cleaned screens, No. 258, bio-activation plant, No. 259. Please specify which bulletin you wish.

Chemically Treated Asphalt Improves Wearability

313 Nostrip Div., Maguire Industries, Inc., 122 E. 42nd St., New York 17, N. Y., will send you data showing how the addition of as little as 1% of a chemical additive to a bituminous compound can increase the life of asphalt. Directions for blending for various types of roads and streets are included, with specifications for its use in different types of blending machines.

Bronze Tablets for Every Municipal Need

314 Bronze tablets for memorial, cornerstone, or sign purposes are described in the illustrated catalog which may be obtained from the United States Bronze Sign Co., Inc., Dept. AC, 570 Broadway, New York 12, N. Y. Complete order-by-mail information is also contained.

Diesel and Diesel-Electric Equipment

315 The Hallett Mfg. Co., 603 South Redondo Blvd., Inglewood, Calif., will send you literature describing its line of diesel equipment. Among the types described in the company's folders are diesels that have close coupling with clutch, direct-coupled, and belt-connected models; low-hp diesels (8 and 18 hp), and diesel-electric generating sets.

Dictaphone Machines Automatically Record Calls

316 Dictaphone Belt recording machines may be used to automatically monitor and record voice radio communications on assigned frequencies, to and from police or fire call boxes, over the telephone, in offices, or prison cells, forming authentic and incontrovertible evidence. For information, write the Dictaphone Corp., 420 Lexington Ave., New York 17, N. Y.

Flexible Pipe Permits Curbed Lengths

317 Universal cast iron pipe, in which the pipe and the joint are in a single piece, is flexible to the degree that curved lines may be laid with straight pipe so that no special fittings are required. This feature also makes the pipe impervious to expansion, contraction, unequal settlement, vibration and shock, and electrolysis. For details, write The Central Foundry Co., 385 Fourth Ave., New York 16, N. Y.

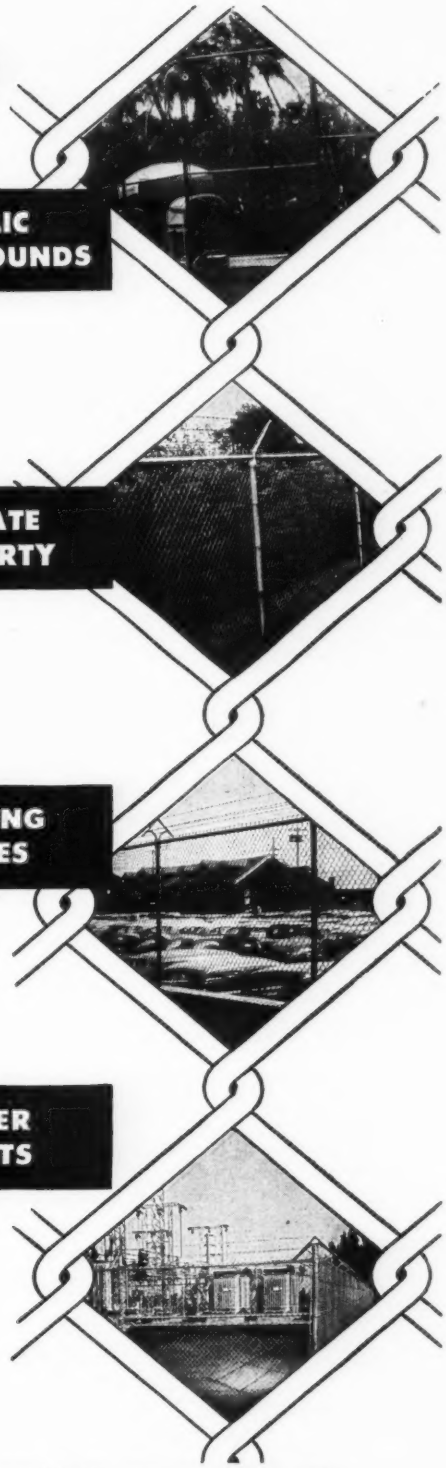
Chemical Feeders For Water Works Plants

318 Bulletin 101-B, distributed by the American Water Softening Co., Lehigh Ave. & Fourth St., Philadelphia, Pa., illustrates the company's open electro-magnetic proportional chemical feeders, which feed any non-viscous chemical continuously, automatically, and definitely proportional to the rate of flow of the liquid being treated.

(*Continued on Page* 28)

Realock Fence

PROVIDES DEPENDABLE PROTECTION FOR . . . .



For any type of real property requiring protection against arson, theft, trespassing or vandalism, a tamper-proof Realock* Fence provides the necessary security—plus many other advantages.

Realock Fence is easy to install, moderate in cost and virtually maintenance-free. A top finish of four point barbed wire is suggested for greatest protection. For schools, playgrounds, homes and gardens, a smooth knuckled selvage (with ends bent back along the weave) insures a satisfactory enclosure.

Only the finest selected materials are used in making Realock Fence—which is further protected by hot galvanizing. Fittings are of malleable iron and pressed steel, heavily galvanized, or aluminum.

FREE CATALOG — FREE ESTIMATES

Without obligation, we will be happy to have the Realock representative in your territory measure your property, work out details for proper protection and submit estimates for fence material ready for erection or covering complete installation by trained crews. For free catalog and further particulars, write to our nearest office.

*Realock is a trade mark identifying the Chain Link Fence made by The Colorado Fuel and Iron Corp. and subsidiaries.

REALOCK FENCE

Realock Fencé

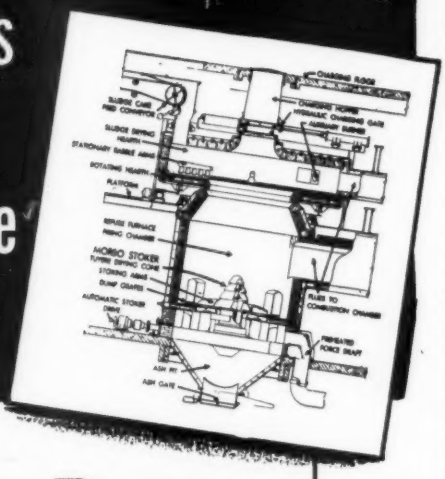
Wickwire Spencer Steel Division
361 Delaware Avenue
Buffalo 2, N. Y.

The Colorado Fuel and Iron Corp.
Continental Oil Bldg.
Denver 2, Colo.

The California Wire Cloth Corp.
1001 22nd Avenue
Oakland 6, Calif.

Branches and Distributors in Principal Cities Everywhere

Destructors for Combustible Wastes



Buy **MORSE BOULGER**

and you buy . . .

1 — GREATER SELECTIVITY
2 — MODERN DESTRUCTORS
3 — LONGER EXPERIENCE
4 — FULL GUARANTEE

HE progressive, sanitary-minded community will not tolerate open dumps or even ineffective, offensive waste disposal plants. It does want and will approve a unit of modern design and construction that will destroy garbage, trash, sewage sludges, institutional wastes and hospital organic matter without producing offensive smoke or odor.

We are interested in serving such communities because we have much to offer in the way of destructors. There's a Morse Boulger design capable of handling any combination of combustible wastes. Our units are *guaranteed* to give satisfactory results. Our field men stay with the job until it is operating 100% and instruct the crews so that they can carry on. Back of this service is 60 years' experience in the field of incineration.

Discussion of your problem and plans places you under no obligation. If there isn't a Morse Boulger representative near you, write us here in New York.

Morse Boulger Destructors include:

1. **Mechanically Stoked Incinerator, Bulletin 111**
2. **Cell and Hearth Type Incinerator, Bulletin 110**
3. **Rotary Hearth and Stoker Incinerator, Bulletin 111 (illustrated)**
4. **Multi-Zone Furnace, Bulletin 114**

MORSE BOULGER DESTRUCTOR COMPANY

205-R East 42nd Street **New York 17, N. Y.**

Representatives in Principal Cities

Check and Mail

Use Coupon on Page 21

The Role of Lubrication In Sewage and Water Plants

319 Correct lubrication plays an important part in the maintenance of sewage treatment and water purification plants. *The Lubriplate Film*, which describes the use of Lubriplate lubricants and lists the most efficient type for each kind of machine and part, may be obtained by writing Lubriplate Div., Fiske Bros. Refining Co., 129 Lockwood St., Newark, N. J.

Full-Circle Revolving Blade On Motor Grader

320 Designed for operator comfort, the Allis-Chalmers AD motor grader has electric brakes, shock-absorbing frame, and "roll-away" moldboard—material which is rolled rather than pushed. For details, write Allis-Chalmers, Tractor Division, Milwaukee 1, Wis.

Heavy-Duty Batteries

321 Hand storage batteries are provided with heavy hand-pasted tank-formed plates, heavy glass mats, acid- and heat-resisting micro-porous rubber separators, and splash decks, and are housed in a hard rubber container; for use in police cars, ambulances, emergency trucks, and with fire apparatus. The manufacturers are The Hand Laboratory, Nyack, N. Y.

Trenching Sheeting That Can Be Reused

322 Armco Drainage & Metal Products, Inc., 305 Curtis St., Middletown, Ohio, will send you detailed information about its corrugated sheeting with continuous interlocking joints that assure correct alignment and practical watertightness. On trenching work, the sheeting may be reused as many as a hundred times.

"Yard-by-Yard" Compression In Garbage Loading

323 The Sicard Sanivan economizes on power by using a "unit" method of crushing—as each hopperful of refuse is collected, it is compressed before it reaches the interior of the Sanivan. For illustrated literature, write Sicard Industries, Inc., Watertown, N. Y.

Centrifugal Pumps With Capacities to 70,000 GPM

324 Descriptive bulletins of pumps for general service, boiler feed, process, and fire protection, with capacities to 70,000 gpm in various sizes and types, may be obtained from the Peerless Pump Div., Food Machinery Corp., 301 West Avenue 31, Los Angeles, Calif.

Move More Yardage with Mobile Crane-Shovels

325 The T-6-K, a 6-ton, ⅜-yard crane, may be converted to dragline, shovel, crane, clamshell, or trench-hoe work without drum changeovers. Its short-tail swing makes it very adaptable for close-quarter work. Bulletin 24 may be obtained by writing the Michigan Power Shovel Co., Benton Harbor, Mich.

Jointing Cast-Iron Water Mains Without Caulking

326 Leadite, shipped in powder form, requires no caulking and no bell-holes. This medium for jointing cast-iron water mains needs only to be melted and poured, and the job is done. Information may be obtained from The Leadite Co., Girard Trust Co. Bldg., Philadelphia 2, Pa.

(*Continued on Page* 30)

IMAGINATION AND "CATERPILLAR" POWER DO THE JOB IN RECORD TIME

A "Caterpillar" Diesel D8 with Hyster arch makes an ideal tool for rail removal, lifting one 62-foot section at a time.

Loading trucks with broken concrete, a "Caterpillar" Diesel D7 and Traxcavator work fast without disturbing traffic.

When the firm of Charles L. Harney took on the contract for removing and replacing streetcar rails on San Francisco's famous Market Street, the time limit set was 300 days. By the ingenious use of equipment never before tried on city streets, the job was completed 187 days ahead of schedule!

Harold W. Purser, Superintendent, makes the following statement:

"Our Market Street job has been 100% 'Caterpillar' powered, and all machines have operated 100% of the working time. Not one minute has 'Caterpillar' Diesel power let us down on this tight-scheduled job."

The line-up of equipment that handled the unusual contract so efficiently included a "Caterpillar" Diesel D13000 Engine, powering the compressor used on air drills and tampers; a "Caterpillar" Diesel D8 Tractor with Hyster logging arch that tore up the old rails; and a "Caterpillar" Diesel D7 Tractor with Traxcavator, for loading broken pavement into trucks.

Versatile and dependable, backed by dealer service that has won wide fame as the finest in the industry, "Caterpillar" Diesels are built to tackle the toughest jobs and return a profit to their owners.

CATERPILLAR TRACTOR CO., PEORIA, ILL.

CATERPILLAR
REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

This new HEIL
COLECTO-PAK
Municipal Refuse
Disposal Body

gives you

Bucket unloads in less than a minute under fingertip control.

★ Low loading height
★ Double capacity
★ Complete enclosure
★ Easy maintenance

Automatic, hydraulic-operated packer plate packs 20 yds. in a 10-yd. body.

The all-enclosed, water-tight Heil Colecto-Pak is the answer to your search for a modern method of speeding-up, simplifying, and improving garbage collection and disposal.

This unit has a ¾-yard loading bucket at a 35-inch height making it extra easy to load. This "power-lifted" bucket deposits load and returns to starting position in less than a minute. At the same time the hydraulic-operated packer plate is compressing the material down toward the discharge end. It is possible to compress 20 yards of wrapped garbage into this 10-yard body.

With this unit your city has a clean, sanitary means of collecting garbage with none of the unsightly and unsanitary features imposed by "open body" collectors. Your city can feel proud of its advanced thinking in purchasing a Heil Colecto-Pak.

BH-114

Tapered body construction assures speedy discharge regardless of compression.

Write for bulletins.

ARMY E NAVY

THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

Check and Mail

Use Coupon on Page 21

Metal House Numbers

327 Stamped and embossed metal house numbers are highly legible, as well as attractive. For information concerning types and sizes, write Premax Products, Division Chisholm-Ryder Co., Inc., 3838 Highland Ave., Niagara Falls, N. Y.

Space Economy and Durability Are Combined in Fire Hose

328 The Bi-Lateral Fire Hose Co., 20 N. Wacker Dr., Chicago, Ill., manufactures a fire hose that stores flat. The result is a fire hose that not only is durable, but that also takes about 25% less room than other types of hose on the fire truck.

Elevated Steel Tanks

329 The Pittsburgh-Des Moines Steel Co., 3412 Neville Island, Pittsburgh, Pa., will send you information about its construction of elevated steel tanks—double ellipsoidal, hemispherical bottom, vertical column, toroidal bottom, and hemi-ellipsoidal bottom types.

Reversible Snowplow Discharges to Left or Right

330 Discharging to left or right at the operator's choice, the new Root Reversible snowplow operates at angles of 28, 35, and 42 degrees. The blades are reversible to give longer use. The snowplow, manufactured by the Root Spring Scraper Co., Kalamazoo, Mich., is available with a 9-foot or 10-foot moldboard. Write for Bulletin 30-50.

Remove Taste and Odor from Your Municipal Water Supply

331 Algae, phenols, and other contaminants that cause taste and odor problems in raw water have been successfully prevented from trespassing through the use of chlorine dioxide. For information about the Mathieson chlorine dioxide technique, write The Mathieson Alkali Works (Inc.), 60 E. 42nd St., New York 17, N. Y.

Protect Property with Fencing

332 Catalog DH-1270, distributed by the Page Fence Association, Monessen, Pa., describes one of the best methods of property protection—the wire fence. It bars stray animals without cutting off the view.

Emergency Table Space

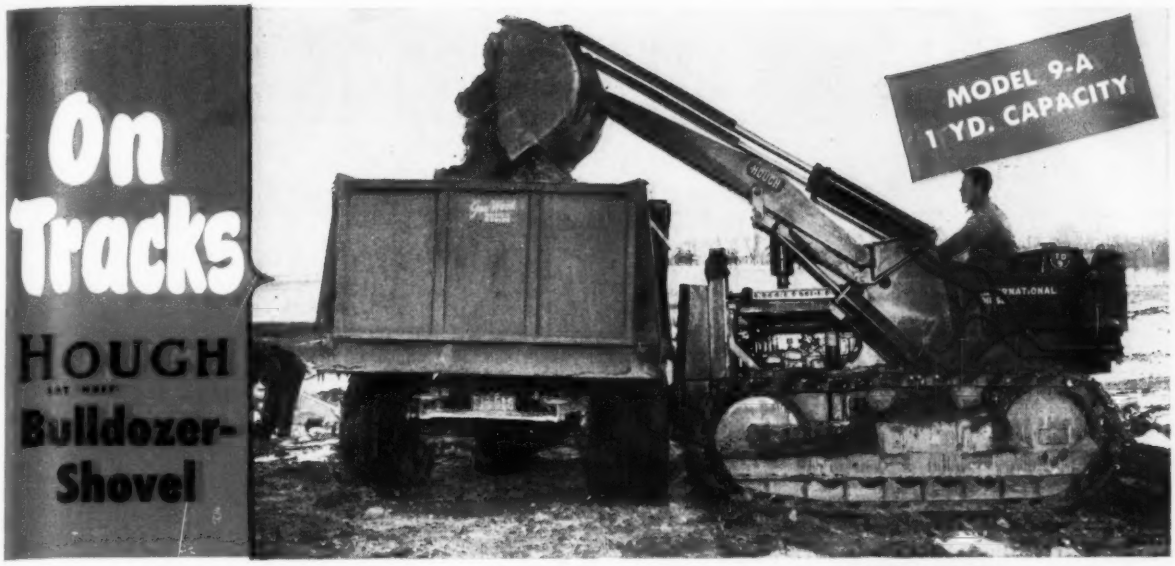
333 The Monroe Co., Inc., 40 Church St., Colfax, Iowa, will send you a circular describing its folding portable tables, useful when extra table space is required. These tables are constructed with the legs well toward the middle so that a greater number of persons may be seated comfortably without "knocking knees."

Asphalts Made Waterproof

334 Kling is an additive that makes cutback asphalts and asphalt cements water resistant, so that street construction and maintenance work can proceed despite bad weather. For details, write the Thomas Robinson Co., Inc., 620 Fifth Ave., New York 20, N. Y.

Durable Materials for Uniforms

335 Reeves Brothers, Inc., 54 Worth St., New York 13, N. Y., manufactures a variety of materials for uniforms, both dress and utility, for municipal personnel. Included are a variety of fabrics, sanforized, with vat-dyed



Hough Tractor Shovels For *YOUR* Job!

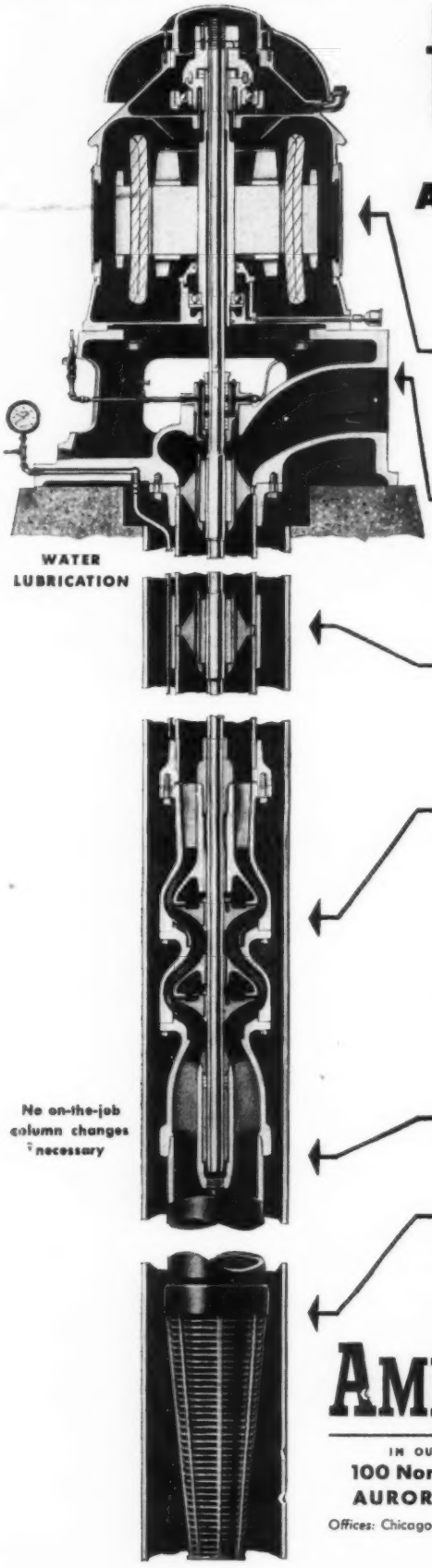
No matter what your job may be, there is a proper size and proper type of Hough Shovel to handle it profitably.

Hough Bulldozer-Shovels, built into International Crawler Tractors, dig, load, haul and dump — earth, ore, rock, minerals, clay, sand or aggregate; load blasted rock; handle bulk materials; strip overburden; excavate basements, and handle the majority of work normally requiring a full revolving power shovel. A Bulldozer Blade increases its utility.

For greater mobility, longer hauls, scattered jobs, or work on paved surfaces, Hough Rubber Tired Payloaders "fill the bill". You can dig, load, carry and dump bulk materials; work on paved or unpaved surfaces; load trucks; handle aggregate; pour concrete; maintain road shoulders; strip, excavate, or handle a wide variety of construction or maintenance work. Bulldozer Blade and Crane Hook attachments available.

Hough Shovels are built in a wide range of sizes to meet varying job conditions — on Tracks or Rubber. We will gladly send you descriptive literature.

THE FRANK G. HOUGH CO.
MATERIAL HANDLING EQUIPMENT SINCE 1920
710 SUNNYSIDE AVE. LIBERTYVILLE, ILL.



from top to bottom

AMERICAN DEEP WELL TURBINES

are designed for long efficient service

MOTOR—Weatherproof, enclosed type keeps moisture and dirt out of working parts of motor. Hollow shaft design simplifies installation and facilitates adjustment of pump rotating element at top of motor. These turbines are also available for engine or dual drive with right angle gear unit.

DISCHARGE HEAD—Deep bronze packing box, grease sealed, with bronze seal rings and gland, and connections for vent to atmosphere and prelubrication line . . . designed for high pressure with minimum leakage. The top line shaft bearing, actually an *additional* head shaft bearing, is located *at the top* of the column, thereby eliminating whipping through packing box.

COLUMN—Full weight steel column pipe in standard 10′ lengths. Straight thread couplings for sizes up to 7″. Flanged construction for sizes larger than 7″. Bronze bearing housings and guides at each column pipe joint. Water lubricated, fluted rubber bearings at non-corrosive wearing surfaces of shaft.

BOWL ASSEMBLY—Flanged upper bearing, provided with two bearings, cast integral, each bearing having a renewable bronze bushing. Flanged bowls, with uniform and smooth water passages and renewable bronze wearing rings. Shaft steady bearings cast integral, provided with renewable bronze bushings. Flanged lower bearing, provided with renewable bronze bearing bushing and wearing ring, properly lubricated and sealed before shipment, requiring no further attention in the field.

Bronze enclosed impellers have uniform, hand finished water passages. Given a final machining operation after assembly on shaft to assure correct running clearances between rotating and stationary elements, and rotative balance. Stainless steel pump shaft with positive stainless steel locking device to firmly position each impeller to shaft.

SUCTION PIPE—Full weight steel pipe which screws on to lower bearing. One ten foot length generally recommended.

STRAINER—Sturdy, galvanized, taper-type, with threaded coupling for suction pipe. Generally recommended to protect bowl assembly.

Also...Split Case Booster Pumps in a wide range of capacities

AMERICAN WELL WORKS

IN OUR 78TH YEAR
100 North Broadway
AURORA, ILLINOIS

Pumping, Sewage Treatment, and Water Purification Equipment
RESEARCH • ENGINEERING • MANUFACTURING

Offices: Chicago • New York • Cleveland • Cincinnati • Kansas City • Sales Representatives throughout the World

Make Water Safe Around the Clock

Water shouldn't be half-safe, nor safe only half the time. It should and *can* easily be safe 24 hours a day with the use of SOLVAY Liquid Chlorine.

You get real protection with SOLVAY Liquid Chlorine, because of its uniformity and controlled quality. Specify SOLVAY when you order your cylinders, tank cars or ton containers.

when you need chlorine specify

SOLVAY LIQUID CHLORINE

TRADE MARK REG. U. S. PAT. OFF.

SOLVAY SALES DIVISION

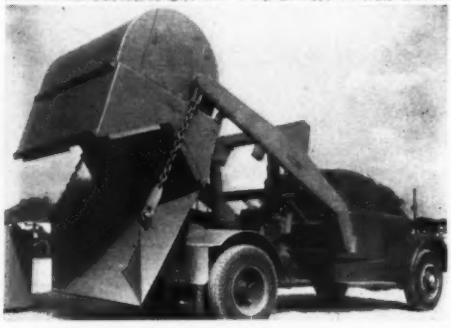
ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

BRANCH SALES OFFICES:

Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit • Houston
New Orleans • New York • Philadelphia • Pittsburgh • St. Louis • Syracuse

Is this a Familiar Scene in your town?



It is unfortunate but true, that some towns still permit trash and rubbish to be deposited at the rear of buildings. in alleys, and even on side streets as shown in the scene above. In addition to being feeding stations for rodents and flies . . . breeding spots for disease, it is a very costly method of trash and rubbish collection.

All of these undesirable features can be eliminated at once, and at tremendous savings, with the Dempster-Dumpster System of trash and rubbish collection. Why pay for all the extra time and extra labor it takes to gather and load this scattered rubbish when one man and one Dempster-Dumpster Hoisting Unit can do the work of 4 or 5 ordinary trucks?

The Dempster-Dumpster System comprises one Dempster-Dumpster Hoisting Unit mounted on your truck chassis, and any number of required detachable bodies, of several different designs, and all handled by the same truck unit. Bodies range in size from 4 to 10 cu. yd. capacities, and are placed at convenient points as trash receptacles in the business district, factory areas, schools, residential areas and housing projects. As these bodies are filled, the Dempster-Dumpster truck hoisting unit makes scheduled rounds picking up, in turn, each loaded body . . . hauls it . . . dumps it and returns the empty to its original location. One man, the driver, handles the entire collection operation.

The neat, sturdy, rubbish bodies are completely enclosed . . . no wind can scatter the rubbish . . . no rats or flies can contaminate it . . . a simple, clean, sanitary and efficient system, and operated on great savings to any town.

Write today for complete information and illustrated literature on the Dempster-Dumpster System.

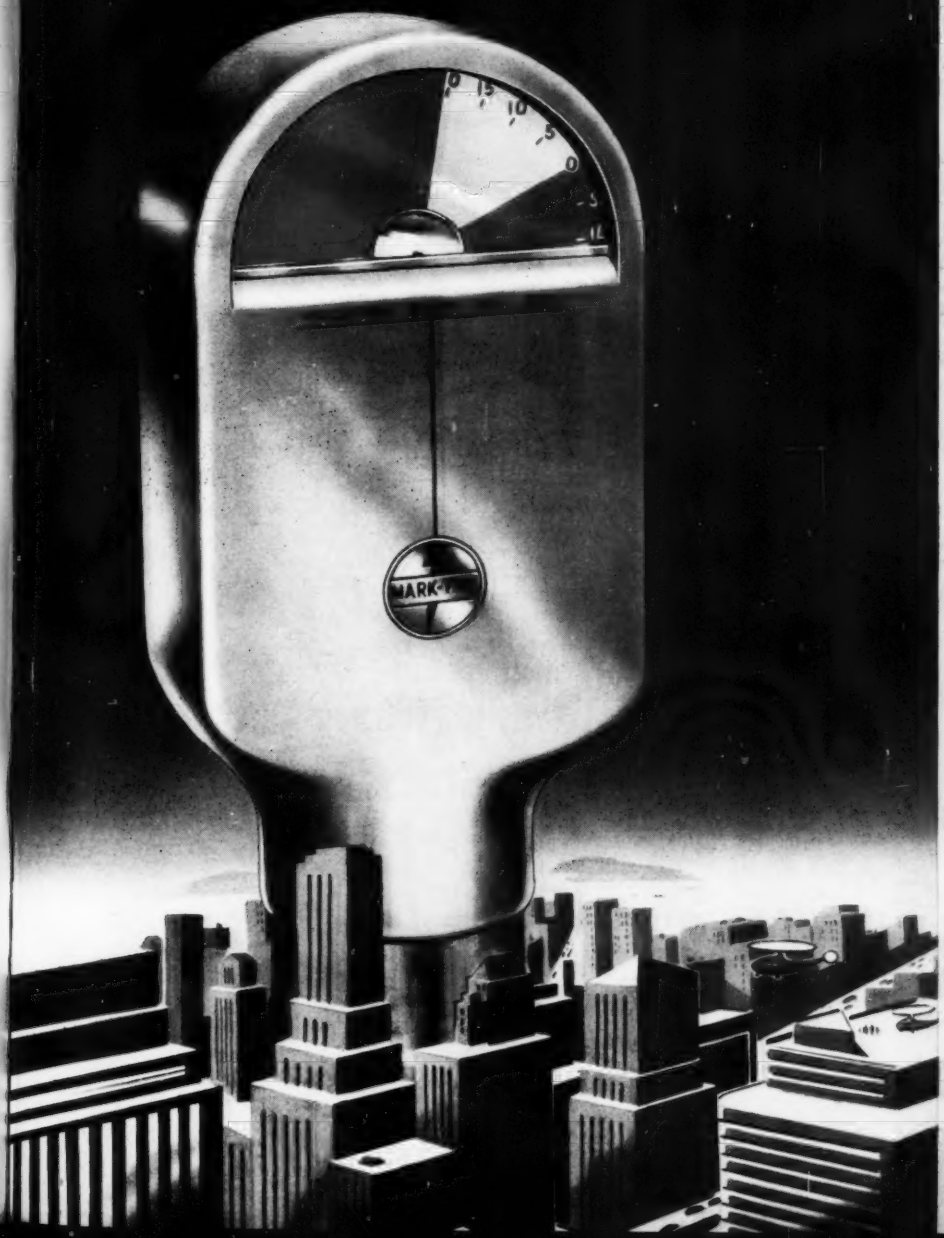
Left Above: Hoisting Unit and Apartment Type Body in carrying position. Center: Truck Hoisting Unit with body on ground. Bottom: Truck Hoisting Unit with body in dumping position. Note how the bottom forms a chute for the rubbish.

DEMPSTER DUMPSTER
TRADE MARK REG.

DEMPSTER BROTHERS, Inc. 3127 SPRINGDALE, KNOXVILLE 17, TENN.

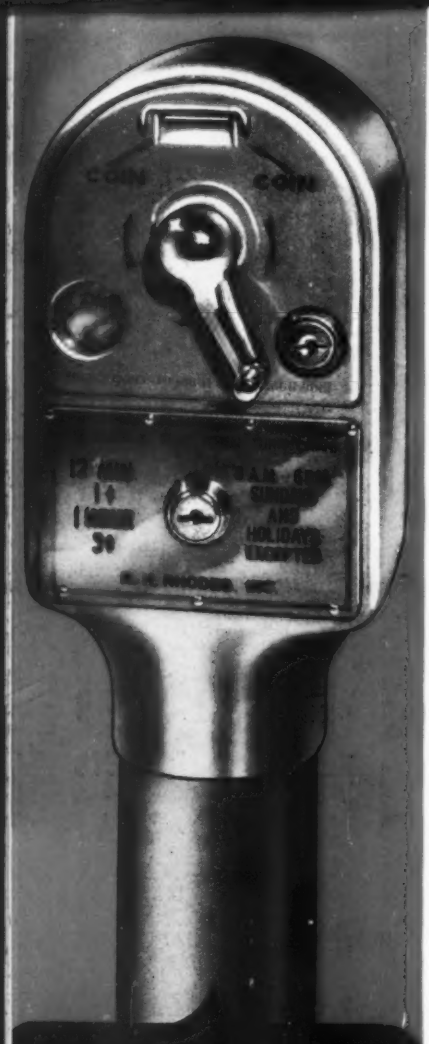
the facts about Rhodemaster

your justified choice in parking meters



when choosing parking meters for your city, base your decision on FACTS . . . . . and facts alone!

You will find the facts about the Rhodemaster on the following pages. . . . . .



THE COMPANY BEHIND

Rhodemaster justifies

YOUR CHOICE

WHEN YOUR CITY CHOOSES A PARKING METER CHOOSE ONE BACKED BY A COMPANY THAT CAN CONTINUE TO GIVE YOU SERVICE . . .

There are two important things to consider when you purchase parking meters . . . the *rugged dependability* of the meter itself and the *proven reliability* of the company which makes it. Both of these factors are important in the protection of your community's long-term investment. Neither, by itself, is a guarantee of a permanently successful installation. To help you choose we present the following facts about this Company and its product the *Rhodemaster* parking meter.

M. H. Rhodes, Inc., one of the largest companies producing time control devices exclusively, was founded in 1930. Rhodes switches soon became standard equipment on the quality products of leading manufacturers of photographic, medical and dental apparatus, as well as industrial equipment of many types. It was, therefore, a natural step to enter the parking meter field with this background of experience in precision timing manufacture, and in 1937 the Pathfinder parking meter was introduced. Thousands of these meters are still giving satisfactory service to many municipalities. As a result of constant research and development, other models followed. The company itself has grown steadily and now employs over 500 skilled workmen, hand-picked from the vast reservoir of Connecticut craftsmen. This combination of experience and skill has produced *Rhodemaster*—the only completely new parking meter introduced by any company since the war and embodies the latest design and engineering advancements. It is with confidence that we say *Rhodemaster* is the most perfect parking meter for your city.

M. H. RHODES, INC. RATED ABOVE ALL OTHER PARKING METER COMPANIES BY DUN & BRADSTREET . . .

Don't accept casual statements regarding financial stability. Demand the proof! The financial standing of M. H. Rhodes, Inc. is the *highest in the parking meter industry.* You can easily verify this at your local bank or direct through Dun & Bradstreet. Our strong financial position is your assurance of the kind of service you have every right to expect, whenever you need it.

With Rhodemaster you get undivided responsibility in . .

MANUFACTURING
SALES
SERVICING
FINANCING
COLLECTION

The advantages of choosing a parking meter made, sold, serviced and financed by one company are of great importance to you and your city. You deal direct with the manufacturer not a factoring company. The responsibility is undivided. All repairs and servicing on timing units are handled direct with the factory. Rhodes finances its own parking meter installations and handles collections directly with you. This complete responsibility is your proof of our willingness to serve you well, that we have the organization with which to do it and the financial ability to stand behind every installation . . . to back up every promise. Only through an organization such as this can you get the *undivided responsibility so necessary to complete satisfaction* with parking meters for your city.

The satisfaction of hundreds of cities justifies your choice of Rhodemaster

Here is the proven record of Rhodes parking meters backed by facts and figures that we will gladly send you.

In the following eight states and in Canada there are more Rhodes parking meters than all other makes combined:

ALABAMA	CONNECTICUT	NEW JERSEY	NORTH CAROLINA
COLORADO	MONTANA	NEW MEXICO	WYOMING

In five states there are more Rhodes parking meters than any other single make.

GEORGIA FLORIDA WASHINGTON NEW YORK OKLAHOMA

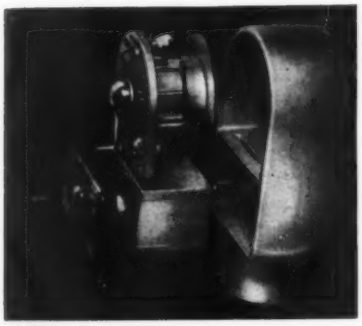
One of the world's largest parking meter installations—5800 in Denver, Colorado—is a Rhodes installation. There are more than 1500 in St. Joseph, Missouri and over 2000 in Newark, New Jersey. Sixty-seven other cities with post-war Rhodes parking meter installations include:

Johnson City, Tennessee
Binghamton, New York
Huntington, West Virginia
Nelsonville, Ohio
Plant City, Florida
Twin Falls, Idaho
State College, Penna.
Roanoke, Virginia
St. Catharines, Ontario, Can.
Valdosta, Georgia
New London, Connecticut
Hobbs, New Mexico
Hot Springs, Arkansas
Patchogue, L. I., New York
Scranton, Pennsylvania
Klamath Falls, Oregon
Dubuque, Iowa
Denver, Colorado
Phillipsburg, New Jersey
Nacogdoches, Texas
Auburn, Maine
Saco, Maine
East Orange, New Jersey
Berea, Ohio
Port Clinton, Ohio
Chickasha, Oklahoma
Duluth, Minnesota
Leechburg, Pennsylvania
Summit, New Jersey
Hackensack, New Jersey
Casper, Wyoming
Cortland, New York
Hartford, Connecticut
Hattiesburg, Mississippi
Marshfield, Wisconsin
Mannington, West Virginia
Fort Myers, Florida
Macon, Georgia
Central City, Kentucky
Pleasantville, New Jersey
Worland, Wyoming
Stillwater, Minnesota
Winter Park, Florida
Faribault, Minnesota
Miami Beach, Florida
Bismarck, North Dakota
Radford, Virginia
Key West, Florida
Americus, Georgia
Port Angeles, Washington
Corbin, Kentucky
New Haven, Connecticut
Poughkeepsie, New York
Tacoma, Washington
New Britain, Connecticut
Kingsville, Texas
Newark, New Jersey
St. Joseph, Missouri
Norman, Oklahoma
Lake Geneva, Wisconsin
Newport, Vermont
Walsenburg, Colorado
Prescott, Arizona
Morganton, North Carolina
Passaic, New Jersey
Yakima, Washington

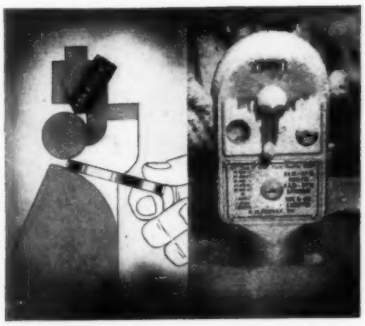
Several of these cities have sent us as many as four post-war re-orders. Remember, these are all facts about Rhodes parking meters. We will gladly send you a complete list of all cities using Rhodes parking meters. We want you to satisfy yourself. The record will justify your selection of *Rhodemaster.*

NINE *Rhodemaster* ADVANTAGES THAT *justify* YOUR CHOICE

1. Low maintenance cost
2. New weather-guard coin slot
3. Long-view time and violation dials
4. Lock-box collection system
5. Simple, trouble-free movement
6. Magic Safety Link protection
7. Magnifying coin window
8. Factory repair service
9. In appearance—a community asset



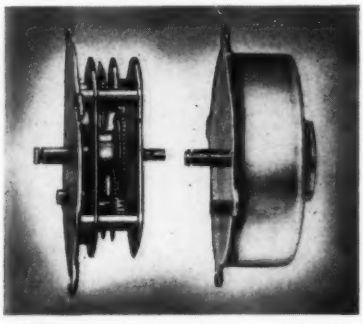
1 *Low Maintenance Cost.* The extreme ruggedness and simplicity as shown in this 3-part unit assembly of the Rhodemaster keeps maintenance costs low.



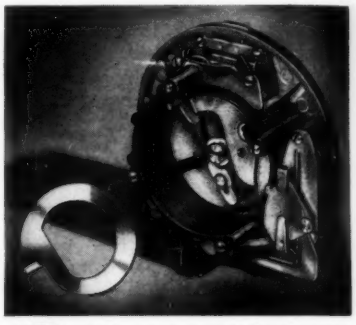
2 *New weather-guard coin slot* gives trouble-free year around service. When a coin is inserted coin roller pushes up and opens. Then it drops shut, tightly sealing out the weather. A small roof over the slot provides protection in stormy weather.

3 *Long-view time and violation dial* can be read from many times the distance of the ordinary pointer signal. Parking time shows in solid white. As time is used an all red dial rotates covering the white. This high visibility makes meter checking easy and quick.

4 *Lock-box collection system* of Rhodemaster has been proved best by the world's largest collector of coin. All collections go into a sealed lock-box. If anyone tampers with the box before it gets to the central collection station immediate detection is assured. Your city gets 100% of the receipts.



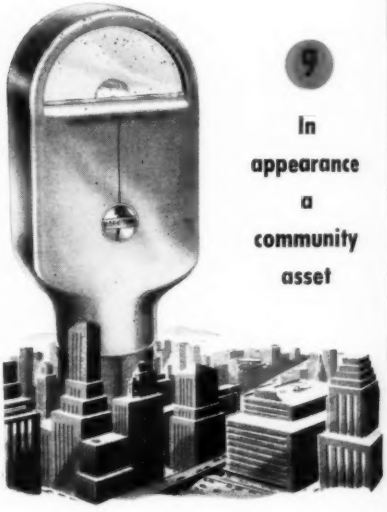
5 *Amazingly simple, trouble-free movement* — There are no delicate, unnecessary parts in the patented Rhodemaster timing unit. It is *not* a clock movement. It *is* a weather-sealed timing mechanism designed for durability and accuracy under the extremes of heat, cold, moisture and dust to which parking meters are subjected.



6 *Magic Safety Link protection* guards your meter against damage just as the safety fuse in your home protects your electrical system. If anyone tries to force the Rhodemaster the easily replaced Magic Safety Link (cost: 10c a doz.) breaks preventing damage to other parts. They eliminate one of the largest maintenance costs of parking meters.

7 *Magnifying coin window* makes coins look larger, so that slugs are easily spotted. It is a thick, shatter-proof convex plastic lens that enables the patrolman to check the genuineness of the nickel at a glance.

8 *Factory Repair Service* eliminates the need for skilled clock repair men on your payroll. Timers requiring service will be repaired quickly by experts at our factory. Just send them to us in the "egg-cell" shipping box (above) which we supply. Simply turn the reversible address card to our address.



9 In appearance a community asset

MARK-TIME

Rhodemaster

YOUR JUSTIFIED CHOICE IN PARKING METERS

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INTERNATIONAL Trucks

AGAIN THIS WINTER MORE FWDs MOVING MORE SNOW

When winter throws its snow blockades across field and highway, more FWD trucks will be clearing more snow than all other makes of four-wheel-drive trucks combined . . . keeping highways open for traffic. 52 State and Provincial Highway Departments and more than 800 Counties own and operate FWD trucks.

The ruggedness, four-wheel-drive "going-power" and traction on all wheels make FWD trucks America's No. 1 snow fighters. Snow removal demands heavy-duty truck performance at its best . . . and that's what you get from FWD four-wheel-drive and six-wheel-drive trucks.

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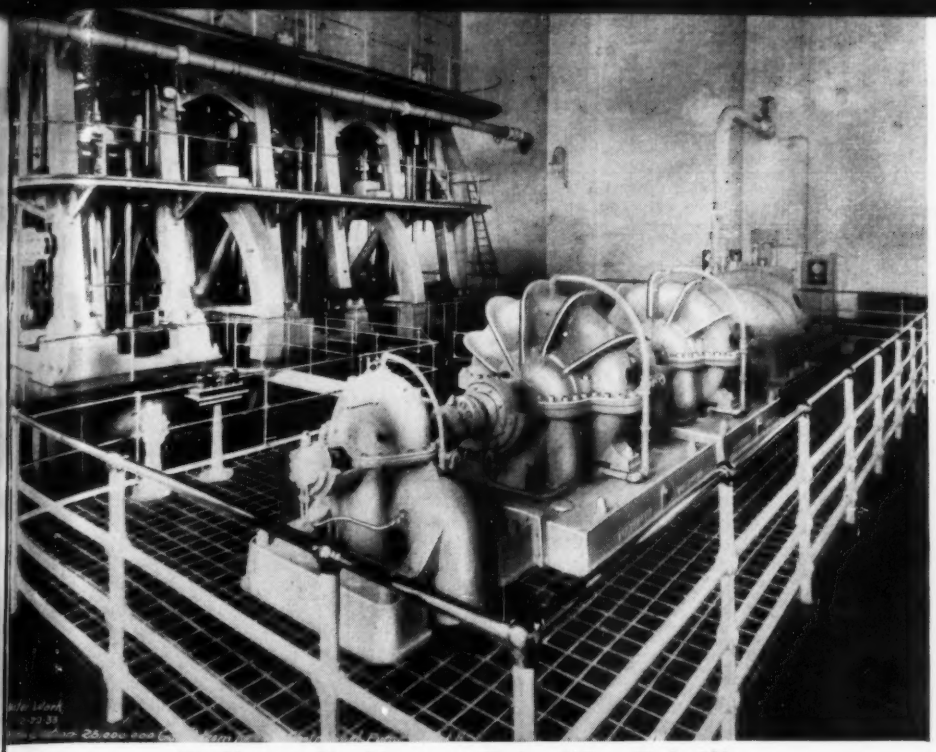
WORLD-WIDE SALES and SERVICE

Photo above: FWD Model M7, with snow plow • Photo at left: With 400 miles of road to clear in Michigan's worst snow belt, this FWD Model 5U plowed snow all winter . . . more than 100 inches snowfall, officially, up to March 1, for the 1946-47 winter!

America's Foremost Heavy-Duty Truck



Worthington turbine driven pump, Cincinnati Water Works, Ohio

1 Pump—25 MGD—210 PSI Head—14 Years

The Worthington pumping unit which was installed by Cincinnati Water Works in 1934 has been operating continuously ever since with scarcely any repairs.

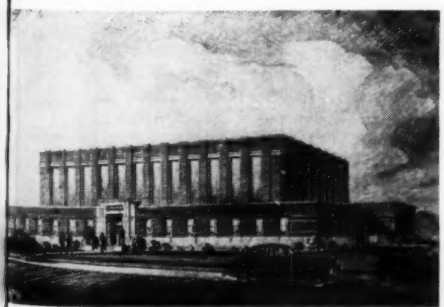
The unit has a rating of 25 million gallons per day against a total head of 470 feet TDH.

The photograph of this unit provides an interesting comparison—in the foreground, the compact 25 mgd unit referred to; in the background a massive 25 mgd Worthington vertical triple expansion reciprocating engine installed over 40 years ago. The latter is one of seven such old time Worthington units still in service at this site.

Philadelphia Gets War-Delayed Pumps

Philadelphia's Bureau of Water began its modernization program in 1941 with the awarding of a contract to Worthington for furnishing and installing new motor-driven single and two-stage centrifugal pumping units for the Torresdale Pumping Station on the Delaware River. The contract covered the following units:

Four	40 mgd, 200 ft TDH,	1750 hp
Two	20 mgd, 200 ft TDH,	900 hp
One	6 mgd, 360 ft TDH,	500 hp
Three	3 mgd, 360 ft TDH,	250 hp



Torresdale Pumping Station of Philadelphia's Bureau ater to be equipped with Worthington pumping units.

Building of the new pump house and the delivery of the pumps were delayed by the war. As a temporary measure to supply increased demand, one 6 mgd unit and two 3 mgd units were put into service in a temporary pump house.

Recently, the bureau reinstated its program with an order to Worthington for the following units to be installed in the Queen Lane Raw Water Pumping Station:

Four	40 mgd, 260 ft TDH
Two	20 mgd, 260 ft TDH

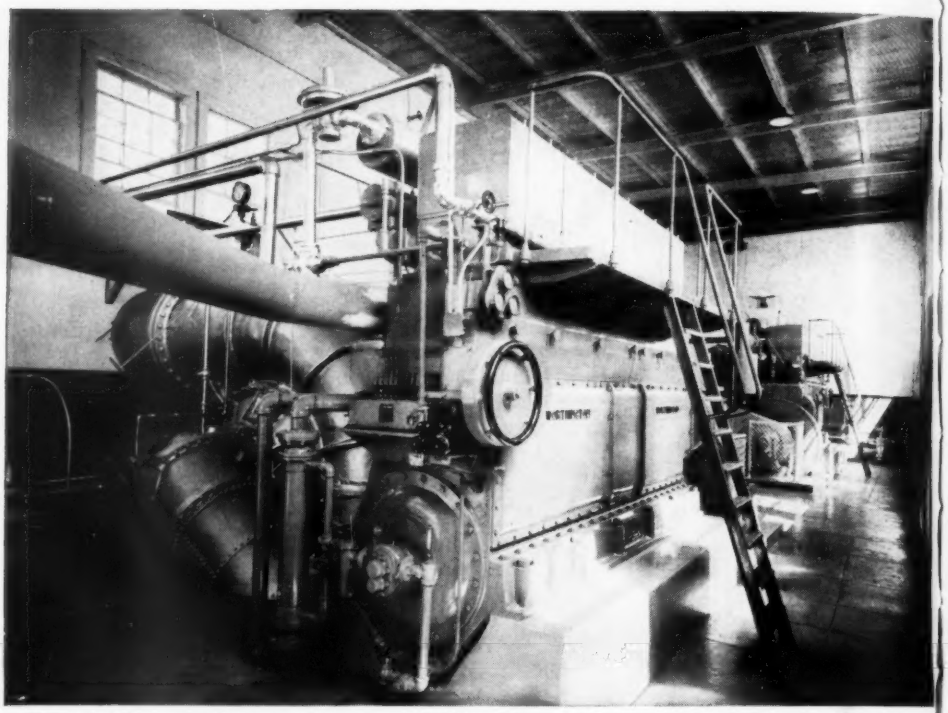
The 40 mgd units are to be driven by 2250 hp unity power factor synchronous motors, the 20 mgd units by 1250 hp motors.

NEWS

FROM THE PUBLIC WORKS FRONT

AS REPORTED BY THE DEVELOPMENT ENGINEERS, FIELD SERVICE REPRESENTATIVES AND CUSTOMERS OF WORTHINGTON

NEWS from the public works front



Two Worthington 500 hp gas engines at second relift station of irrigation system located at Weslaco, Texas

Steam to Electricity to Gas— and the Same Worthington Pumps

Worthington pumps installed in 1915 and 1918 in Hidalgo and Cameron Counties' Water Control and Improvement District No. 9 relift plant north of Weslaco, Texas, have survived several transitions at the prime mover end and today are still operating, now with power supplied by Worthington gas engines.

Originally the pumps were powered by a tandem compound steam engine directly connected to the pump shaft. After several years' operation on steam, the pumps were converted to electric drive by installation of synchronous motors on the old engine shaft at the point where the flywheel had been located.

After operating for several years on electric drive, the discovery of oil and gas in the Rio Grande Valley made gas a much cheaper power source, and so gas engines and chain drives were installed, with the sprockets of the drive installed on the old engine shaft where the rotors of the electric motors had been located.

The gas engines are Worthington 500 hp vertical enclosed engines operating at 360 rpm through a silent chain drive to Worthington 45 in. horizontal double suction volute centrifugal pumps delivering 70,000 gpm against 18.5 ft TDH at 120 rpm.

The engines are equipped with air filters, exhaust silencers and a closed jacket water system. The jacket coolers consist of bare tube heat exchangers installed in the discharge canal in front of the pump outlet, and a small water softener treats the jacket makeup.

The drive is lubricated from the oiling system of the main pump bearings. This system consists of a small belted rotary oil pump delivering to an overhead oil filter and storage tank from which the oil flows by gravity to the main pump bearings and chain, and drains to the base of the oil tight chain case, whence it is picked up by the rotary pump.

A novel feature of the engine installation is a friction brake to prevent the unit from running backwards in the event the main pump discharge flap or check valve failed to function. This is a hand-operated brake applied to the flywheel rim, and on one occasion since the plant was built an accident occurred to the discharge flap gate which would have probably caused serious damage to the engine had this brake not been installed.

These Worthington units have been in service for six years and are giving excellent results.

Veterans Hospital Contractor Using Blue Brutes 100%

Worthington "Blue Brutes" are doing their part in breaking ground for the new Franklin D. Roosevelt Veterans Hospital in Crugers Park, near Peekskill, N. Y. Contracts totalling $22,400,000 have been awarded for this hospital for neuropsychiatric veterans, which will be the largest Veterans Hospital in the United States.

The first contractor to start field work on the 900 day job of transforming the 383 acre site into a medical center was the Mt. Vernon Contracting Corporation of Mt. Vernon, New York, which has a $3,000,000 sub-contract for excavating, grading and other remodeling of the topography. The Mount Vernon Contracting Corporation is sub-contractor for Merritt, Chapman & Scott of New York City, and Fred J. Brotherton, Inc., of Hackensack, N. J., who have been awarded contracts for the major portion of the project.

The Mount Vernon Contracting Corporation is using 100% Worthington "Blue Brute" equipment on its rock excavation job. At the present time, there are nine 500-ft Diesel Portable Compressors, two 315-ft Diesel Portable Compressors, fourteen Wagon Drills, and eighteen Hand Held Rock Drills in operation.

Views of Worthington "Blue Brute" Compressors and Drills at site of Franklin D. Roosevelt Veterans Hospital

7-15

Worthington Pump and Machinery Corporation

•

Harrison, N. J.

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FIND THAT LEAK!

This efficient little device for detecting leaks in pipe lines may be used by anyone *without special engineering experience.* All you do is make contact with a pipe or valve and the leak sound is perfectly audible in the head set. Shows you just where to dig. For the plumber, inspector and maintenance man, this device is invaluable.

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For making pipe by hand methods by either the wet or semi dry processes. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length.

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CLEANING A WET DITCH . . . keeping rear truck on road.

"99-H"

Built to Outperform

No Motor Grader without All-Wheel Drive and All-Wheel Steer can hope to equal the all-around operating efficiency of the Austin-Western "99-H" Power Grader, with its High-Lift Blade, Extreme Blade Reach and Completely Reversible Blade.

On the "99-H" there are no idling front wheels—no dead front end to consume power and decrease operating efficiency. The entire weight of the machine is on the driving wheels—front and rear—contributing 100% to traction, and getting the most out of the 13-foot blade.

All-Wheel Steer provides unequalled maneuverability; saves time on every job; makes it possible to work in places where ordinary motor graders cannot go—do things they cannot do.

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Austin Western

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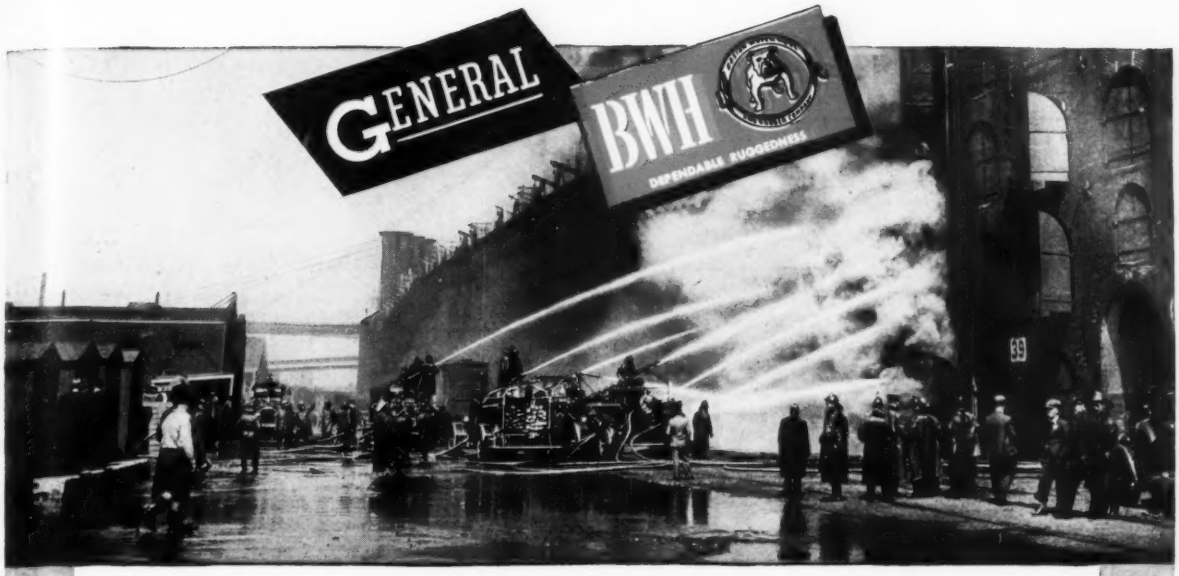

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TAKES TOUGH JOBS IN ITS STRIDE

BWH "BOSTON FIRE JACKET" HOSE
Double Jacket
Made with heavy, high tensile, long staple yarns for extra stamina, outstanding quality.

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Light, flexible hose with good weight jacket and substantial tube. For communities where a light pressure hose is sufficient.

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Made in strict accordance with the National Board of Fire Underwriter's specifications. Labeled or unlabeled.

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The General Detroit Corporation and its subsidiary, the General Pacific Corporation, have recently been appointed exclusive sales agents for BWH Municipal Fire Hose in most localities. Because of their long experience in manufacturing fire extinguishers and motor fire apparatus, they can give you expert advice on all municipal fire equipment problems. Call your nearby "General" representative next time your city needs fire hose. Look for the "General" trade mark in the classified section of your phone book.

NOW! *Distributors of famous*
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MANAGEMENT INFORMATION SERVICE

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Inaugurated late in 1945, this Service is now being used regularly by over 300 cities. It will enable you to receive immediate expert advice and reports on management problems in your *town or city.*

How It Works

You write, wire, or telephone for information on what is considered best practice in handling a specific municipal problem, what other cities are doing about it, what the trend is, etc. Over the past three decades ICMA has collected on a nationwide basis a vast amount of information which it now makes available to all cities on a subscription basis.

It Also Includes

1. In addition to replies on specific inquiries, subscribing cities receive from one to 12 subscriptions (depending on size of the city) to the monthly journal *Public Management* published since 1919, and devoted to the improvement of municipal administration.

2. Cities also receive from one to 10 copies of the 1947 *Municipal Year Book*, the authoritative resume of the activities and statistical data for more than 2,000 American cities, published since 1934.

3. One copy each of special information reports issued monthly. Partial list of recent reports:

How to Codify Municipal Ordinances
Rules of Order for City Councils
Trend Toward One-Man Police Cars
Granting Sick Leave With Pay
How to Reduce Insurance Costs
Management of Motor Equipment
Procedure in Establishing Merit System
Personnel Rules and Regulations
Water Charges Outside the City
Improving Handling of Traffic Violations.

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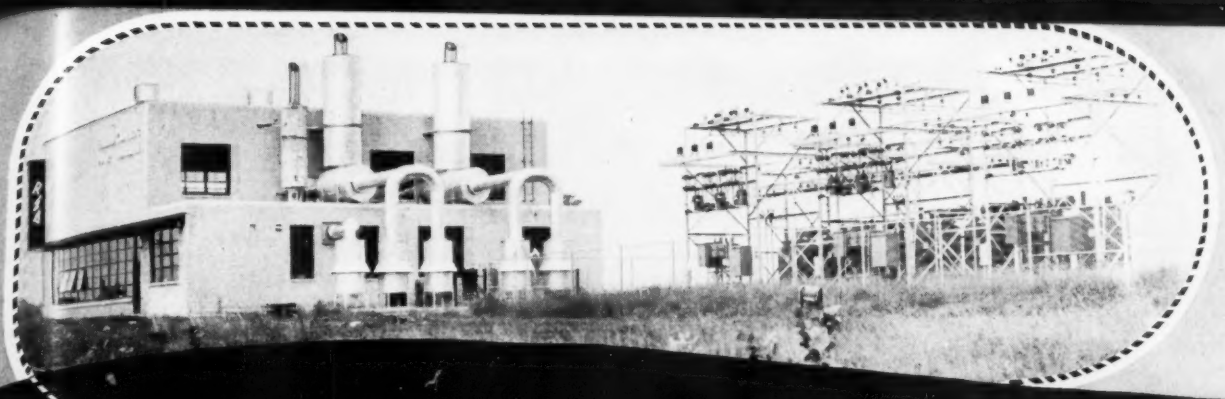
Over 300 cities in 40 states ranging in size from 1,000 to 400,000 have subscribed to this Service. The number of subscribing cities in selected states are:

California	26 cities	Kansas	12 cities	Ohio	10 cities
Colorado	5 "	Maine	12 "	Texas	30 "
Florida	24 "	Michigan	34 "	Virginia	17 "
Georgia	12 "	Missouri	9 "	Wisconsin	11 "
Illinois	9 "	North Carolina	8 "	Canada	10 "

What It Costs

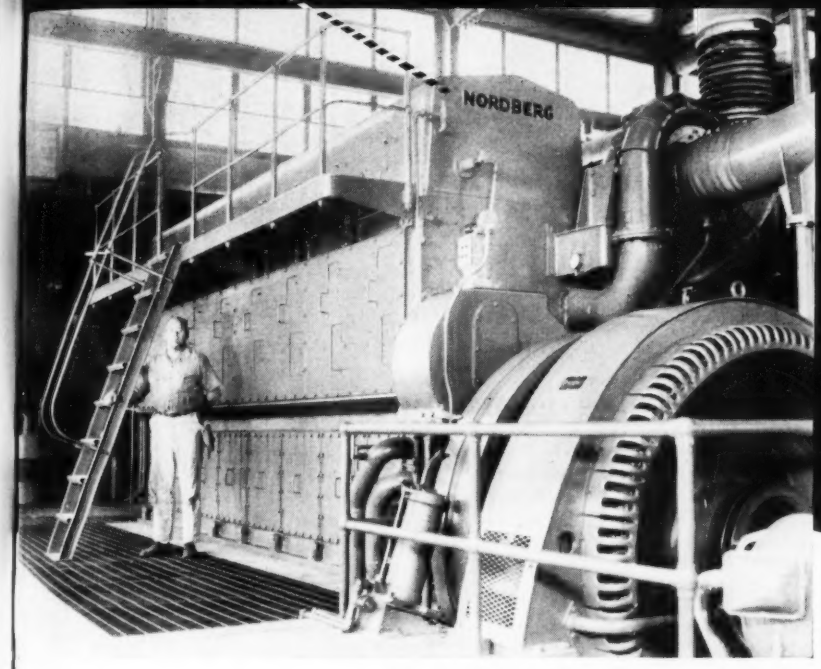
MIS is available to all cities and towns on a subscription basis regardless of form of government. The fee varies with the size of the city from $20 for under 5,000 population to $400 for cities of 250,000 to 500,000. For more details write:

INTERNATIONAL CITY MANAGERS' ASSOCIATION
1313 East 60th Street **Chicago 37, Illinois**



NORDBERG DEPENDABLE DIESEL POWER

serves more of Iowa's farms



An eight cylinder, supercharged, four-cycle, 1630 horsepower Nordberg Diesel engine was recently installed in the new Federated Cooperative Power Plant at Plainfield, Iowa. This fast growing rural electrification system operating in 17 counties in north central Iowa has long been a user of Nordberg Diesel engines. Comprising six rural electric cooperatives with 13,499 members, this association installed its first two Nordberg engines in a power plant at Reeves in 1939. With repeat orders for the Reeves and Plainfield plants, it now has five Nordberg Diesels having a total of 6880 horsepower. Here is another of the many satisfied users of dependable, low cost Nordberg Diesel power.

Nordberg Diesel engines in two and four-cycle types for oil and gas burning are available in sizes up to 8500 horsepower. When in need of additional power equipment, investigate the merits of Nordberg Diesels.

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DIESEL ENGINES

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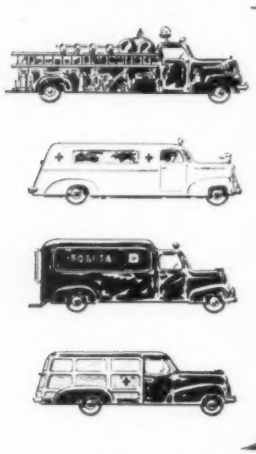
EMERSON TO ~~THE~~ EVERY RESCUE !!!



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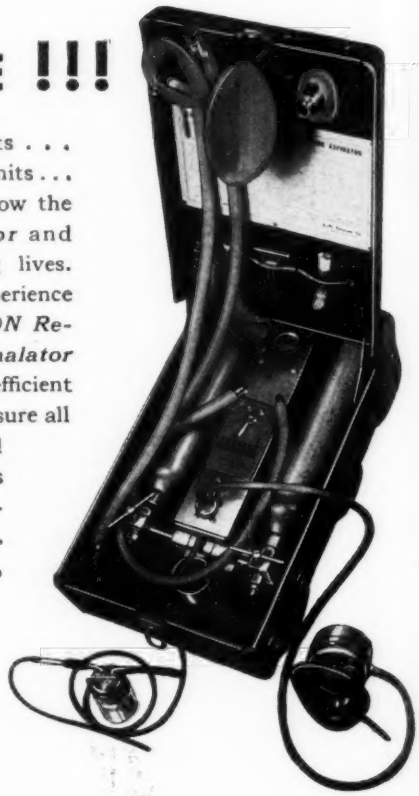

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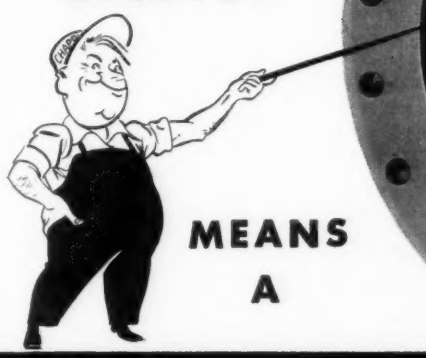
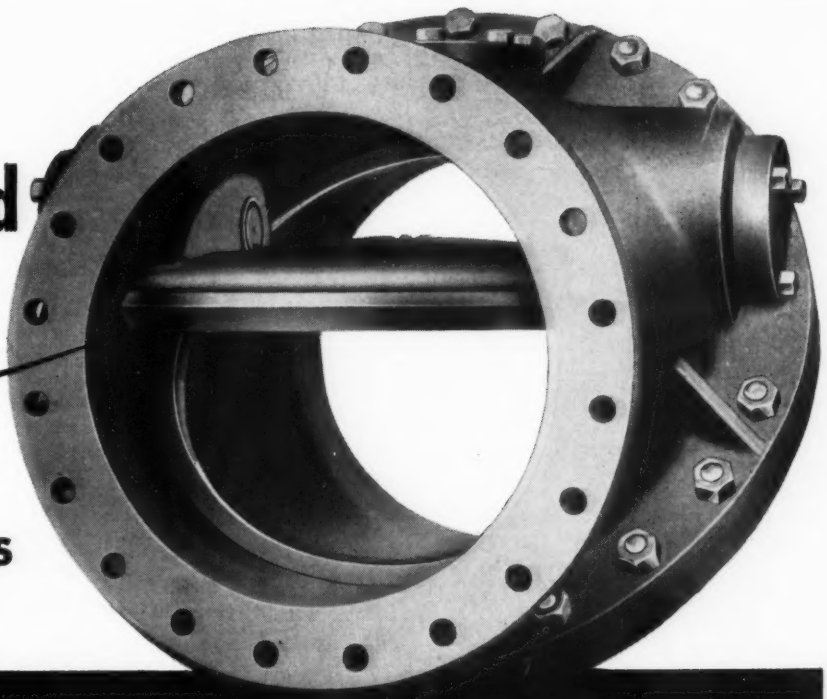


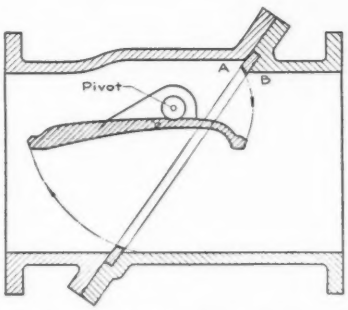
MEANS A



QUIET CLOSING

CHAPMAN CHECK VALVES

TILTING DISC



Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

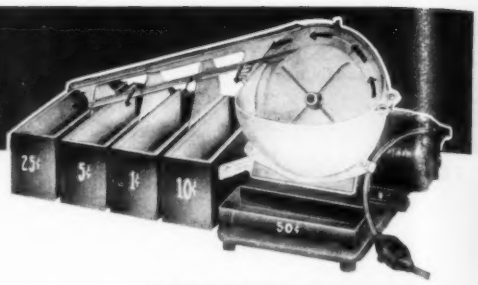
Available in iron and steel. Write for bulletin containing complete information.

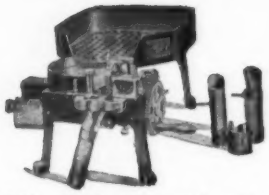
The closing of Chapman Tilting Disc Check Valves is *cushioned* by the effect of the stream against the short flap of the balanced disc. The result of this cushioning action is that slamming is eliminated. Pipe-line stresses and strains are thereby reduced, and maintenance costs are cut.

Head losses are reduced 65% to 80% of those experienced with conventional type check valves. Substantial power savings are possible when Chapman Tilting Disc Check Valves are installed on pump discharge lines.

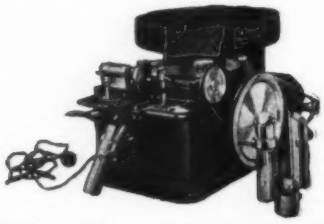
THE CHAPMAN VALVE MFG. CO.
INDIAN ORCHARD, MASS.

FOR HANDLING COINS





Model No. 2X Hand Operated counts and packages 400 coins a minute or counts 2,000 coins into a bag. Weight 25 pounds.



Model No. 4ET Motor Driven counts and packages 800 coins a minute or twice as fast as the manual machine. Wear and friction have been reduced to minimum. Weight 76 pounds.

Abbott Coin Handling Machines

are used by many municipalities for sorting, counting and wrapping money taken from parking meters. All Abbott machines, manual and electric driven, count any and all five denominations of coins. Both counting machine models shown here automatically lock after each count of 20, 25, 30, 40 or 50 coins or will count indefinitely into a bag. Register can be reset to zero.

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Motor Driven, is portable, visible, automatic. It separates mixed coins at the rate of 1200 a minute. The coins are put in the aluminum receptacle, the switch is turned on, the disc rotates and carries the coins up to the runway where quarters, nickels, pennies and dimes fall into four separate boxes on the left and half dollars fall into a box directly in front of the aluminum receptacle. Dimensions: 22" wide, 9" deep, 10" high. Weight 30 pounds. Black enamelled finish on the steel, polished aluminum receptacle. Regularly equipped with 1/30th horsepower motor, 110 volts. Please state whether AC or DC current is used.

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We can supply most any item needed for handling coins or currency. These include various types of coin wrappers and currency straps . . . coin bags, mail, bond and security bags . . . lead seals and lead seal press . . . steel trays for containing wrapped coins . . . currency trays. Please write for catalog describing these supplies and our coin handling machines.

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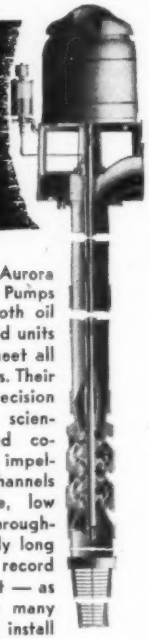

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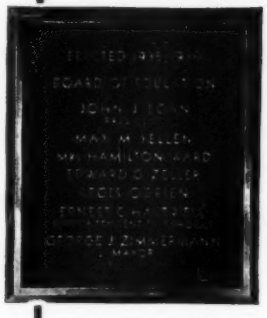

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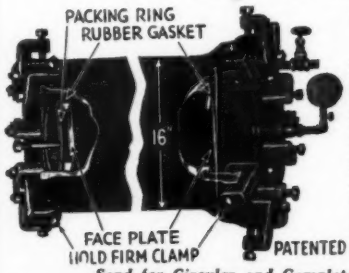

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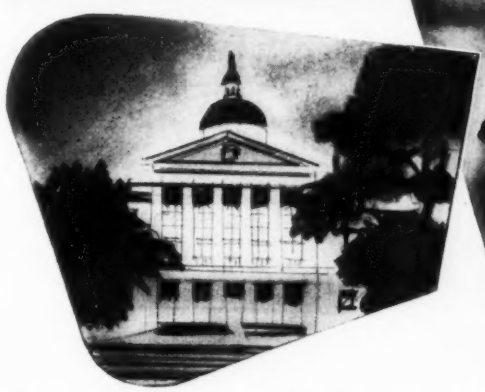

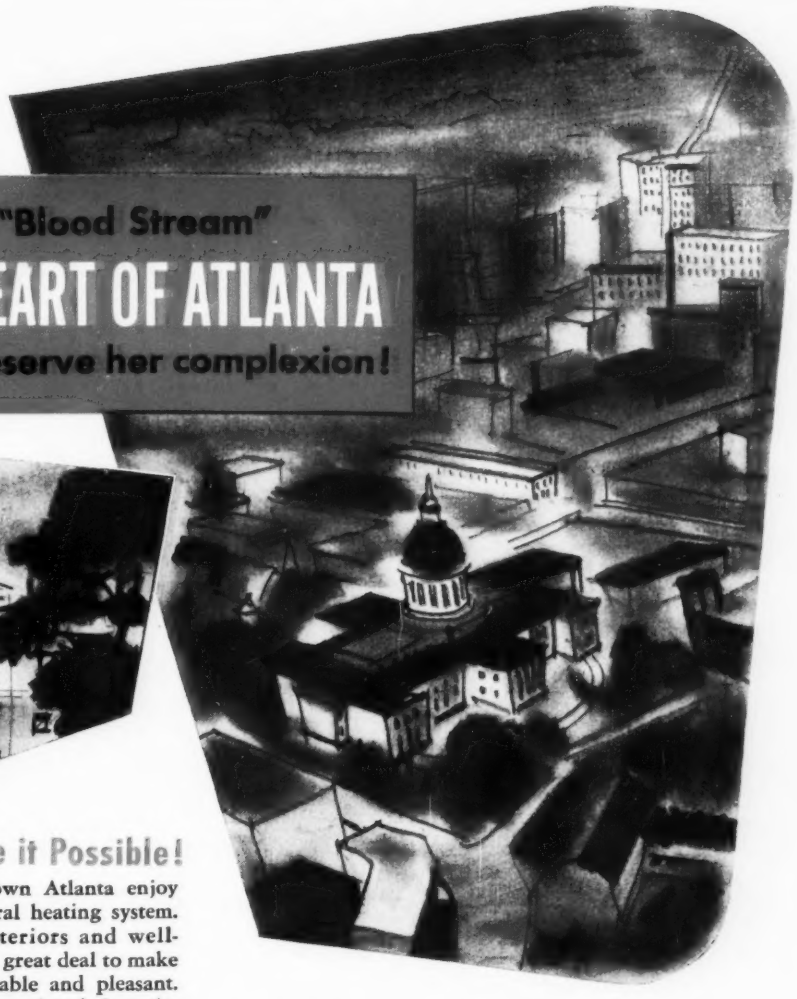

Central Heating Made it Possible!

Thousands of people in downtown Atlanta enjoy the benefits of the district's central heating system. Buildings with clean, bright exteriors and well-lighted, well-heated interiors do a great deal to make their standard of living comfortable and pleasant. Few of them, however, are aware that below the ground is a veritable "blood stream"—48,486 feet of pipe mains distributing steam throughout the area from three boiler plants.

Among the 465 customers of the Georgia Power Company's steam distribution system are two United States Post Offices, the State Capitol, City Hall, Municipal Auditorium and other municipal buildings, as well as three housing projects. Commercial customers include 20 out of 26 office buildings, 6 out of 7 leading hotels, and practically all of the department stores and other retail establishments. Separate boiler plants previously maintained by many of these users have now been abandoned.

Central heating is not new to this progressive city. Operations were started in 1901, with about 50 customers, and have steadily expanded to the present impressive status. The operation is consistently profitable even though Atlanta's record of 2,865 normal degree days is only approximately 55% of the number for a representative northern city like Pittsburgh. Since 1924 the Georgia Power Company has purchased all excess steam generated by the City's incinerator plant. This amounts to approximately 30% of the system's total annual requirements, and about 80% of its needs during the summer months.

The system offers many advantages to the numerous private and public buildings and the housing projects which it serves—gives them maximum functional use of their space, eliminates all the problems connected with individual boiler plant operation, fuel deliveries and ash disposal.

To assure high thermal efficiency and dependable, trouble-free operation, as well as ease and speed of installations, Atlanta's steam system includes a considerable footage of Ric-wiL prefabricated insulated pipe units.

Want help on Central Heating problems? Ric-wiL case histories, project studies, other helpful literature available upon request.

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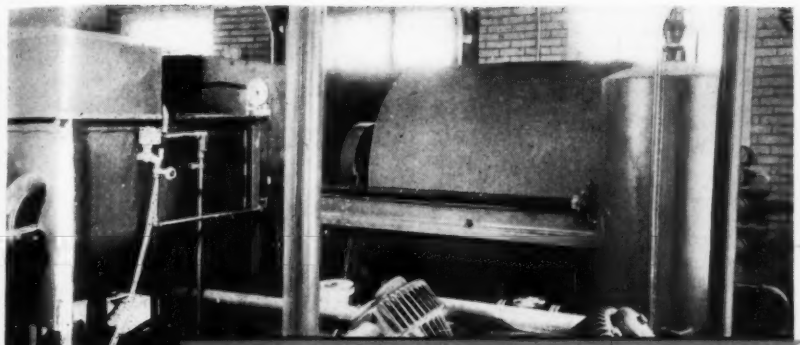

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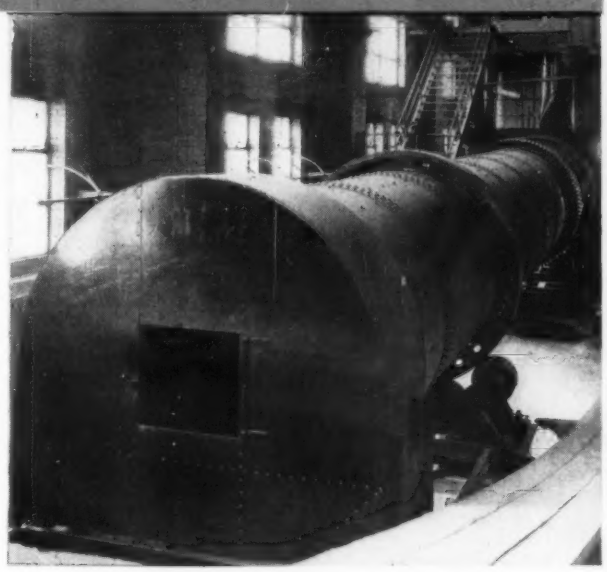
General American engineers, skilled in designing and building dewatering and drying equipment, are glad to work with municipal and consulting engineers in planning new units or revamping present plants to meet changed conditions.



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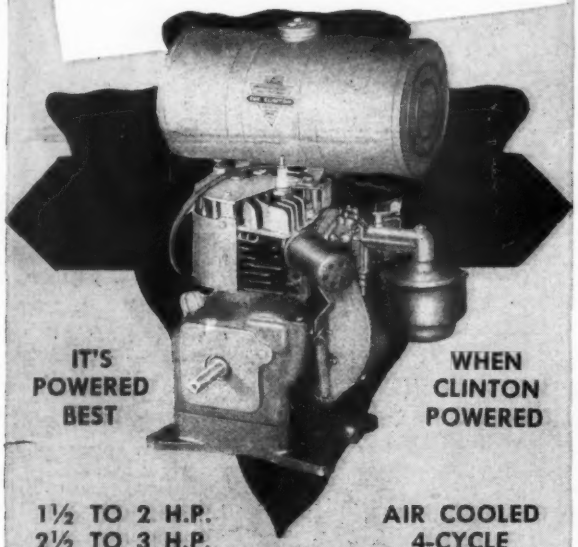

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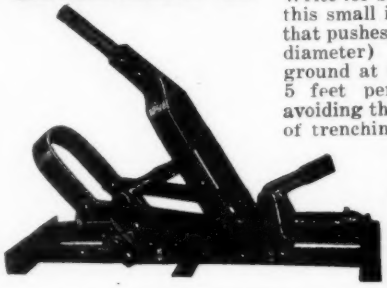

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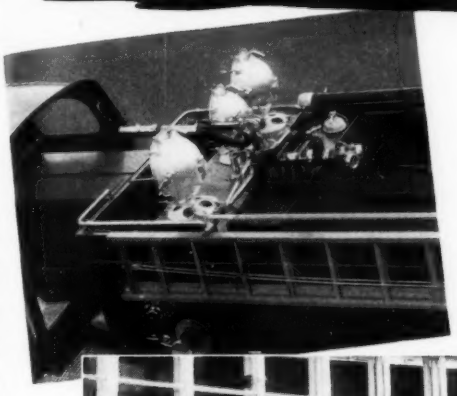

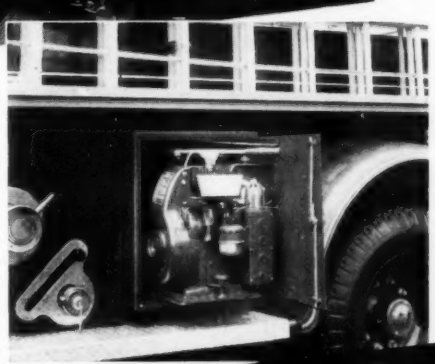

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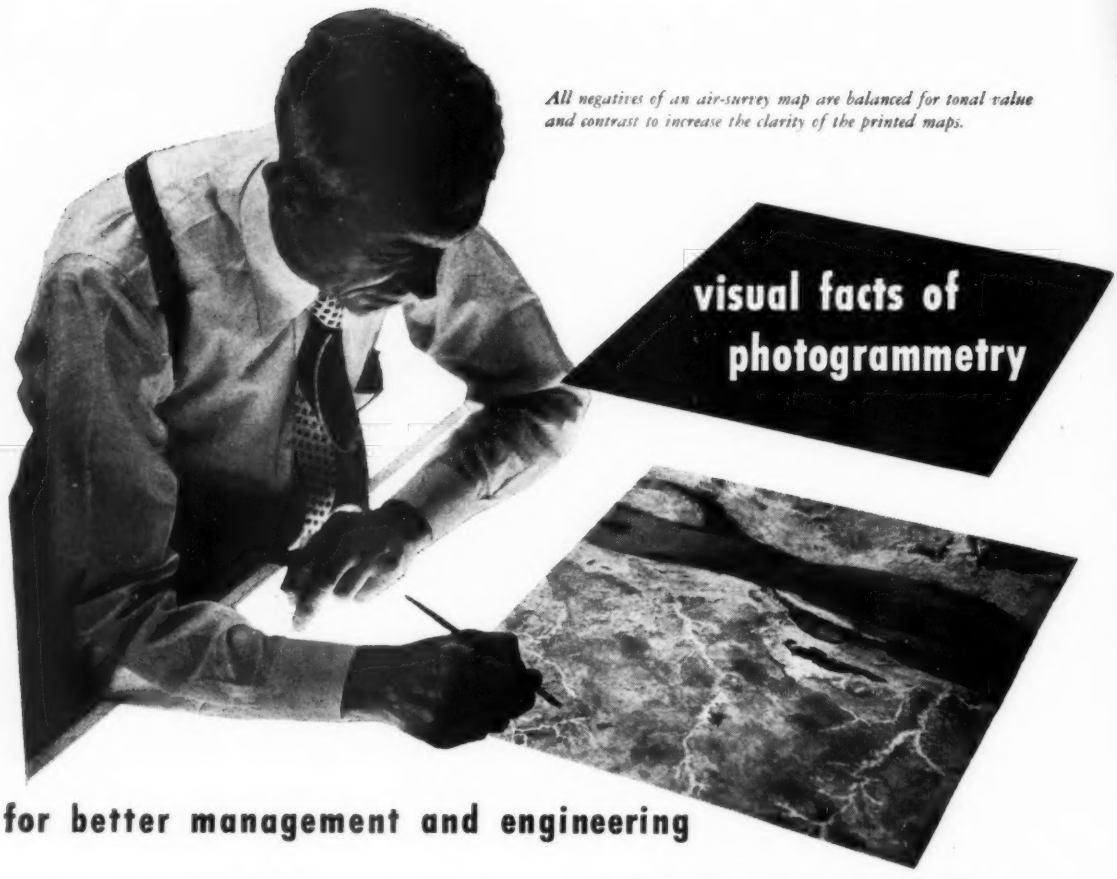

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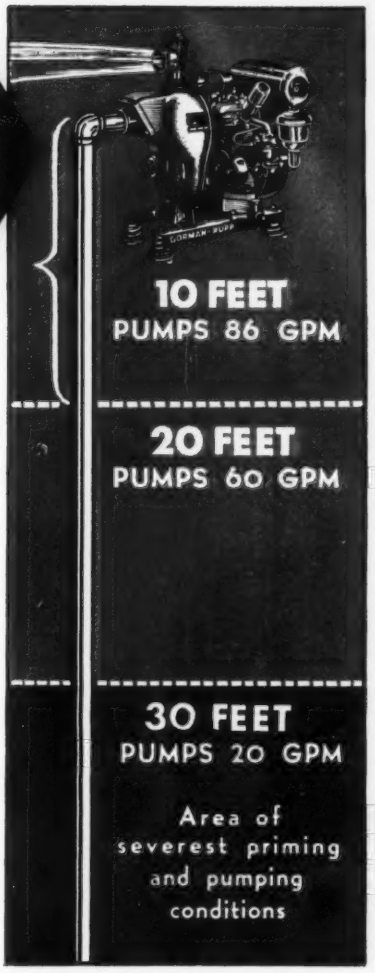

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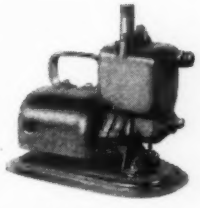

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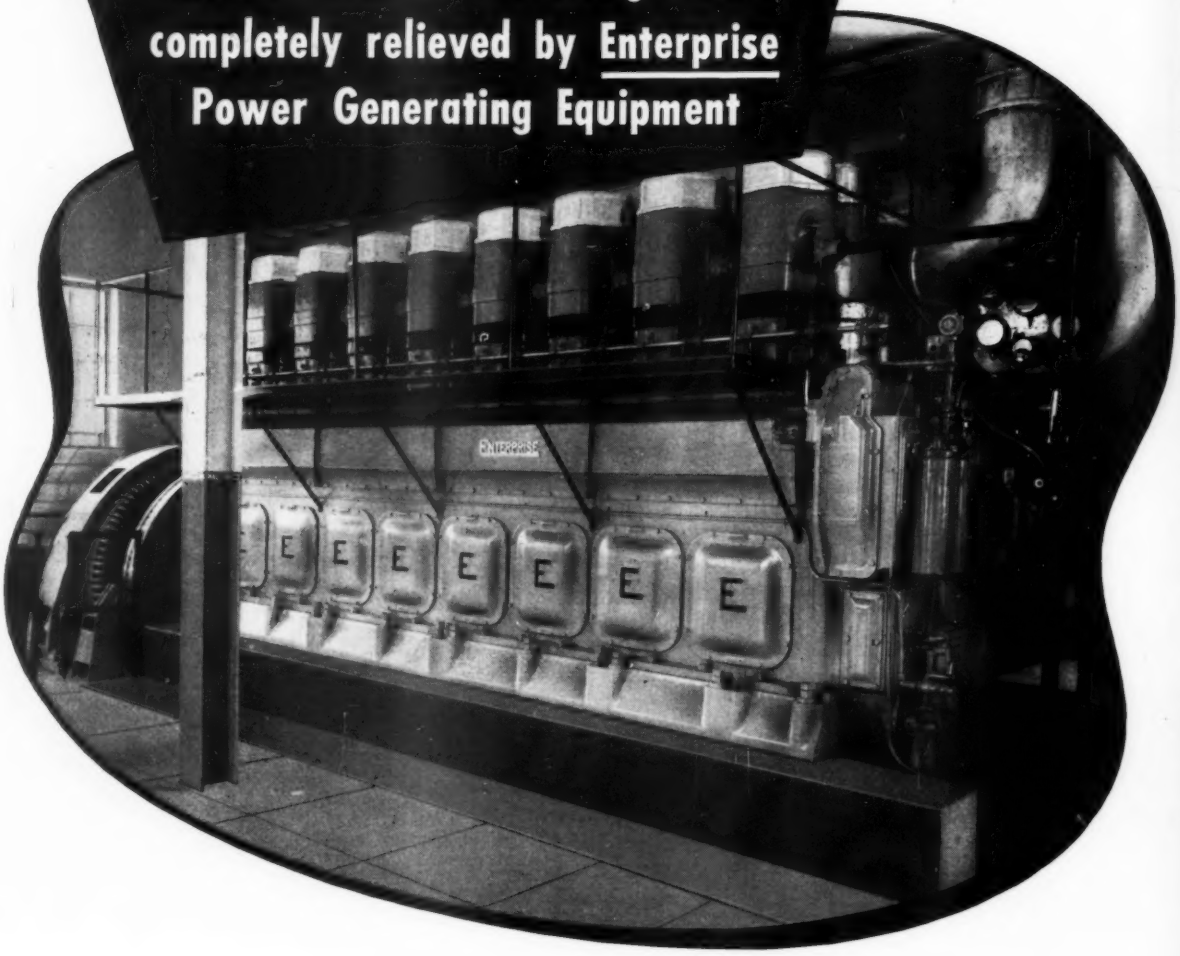

Since the installation of its first Diesel engine in 1921, the City of Elk Point, South Dakota has added new power to its power plant on the average of one every six and one half years. This year Elk Point suffered a most severe case of "growing pains," with greatly increased municipal and R. E. A. electrical requirements sorely testing the capacity of existing facilities. A new and larger unit was rush ordered, (an Enterprise Model DSQ-8) and the power house was enlarged to accommodate this engine plus a future unit.

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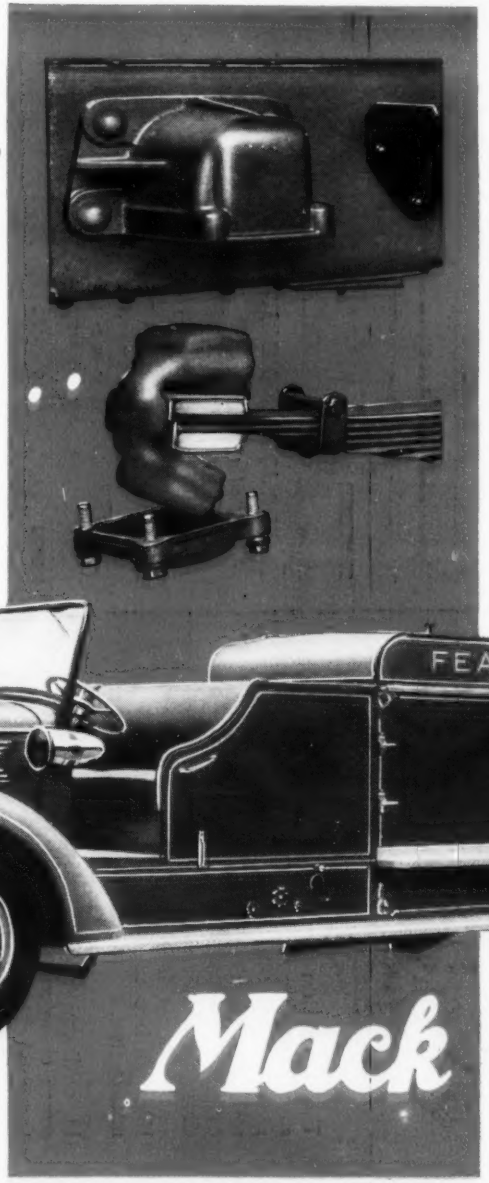
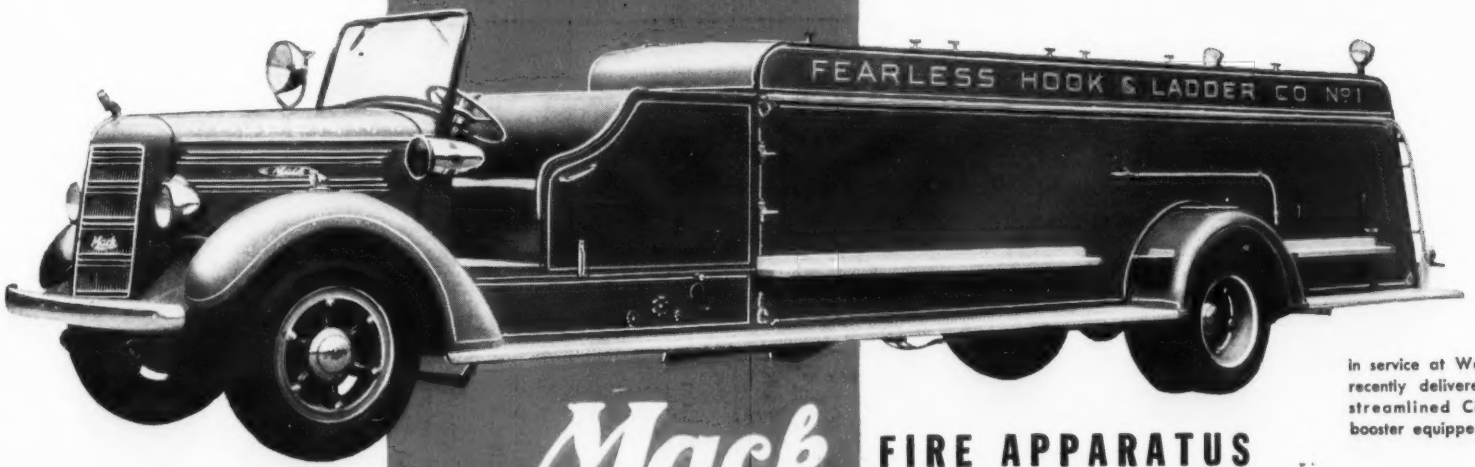


● Count on Mack fire apparatus to stand up better . . . to deliver longer-lasting top performance . . . because of engineering ingenuity, manufacturing thoroughness and attention to detail in every part. An example: the rubber Shock Insulator, developed by Mack engineers over 20 years ago and still the best means of retaining spring ends. These Shock Insulators, by preventing metallic contact between springs and chassis, absorb vibration, reduce wear, eliminate lubrication and adjustment at spring ends. They help provide the smooth, reliable low-maintenance performance for which Macks are noted . . . *and they are found only in Macks.*

When ordering your new apparatus, remember that over 1,000 fire departments have chosen Macks as the finest for modern firefighting.



in service at Walden, N. Y., is this recently delivered Mack Type 45 streamlined City Service Truck, booster equipped.

Mack

FIRE APPARATUS

MACK MANUFACTURING CORP.
FIRE APPARATUS DIVISION
LONG ISLAND CITY 1, NEW YORK

Factory branches for parts and service in all principal cities. In Canada, Mack Trucks of Canada, Ltd.

TRIPLE COMBINATION PUMPERS 500 TO 1250 GALLONS . . . SQUAD WAGONS . . . CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

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The Ozonation process deserves a toast, since it makes water healthful, as well as pleasant, to drink. Pleasant because Ozone removes obnoxious tastes and odors arising from algae, decayed vegetation and industrial pollution, while leaving none of its own, since Ozone is simply activated oxygen. Heathful because Ozone is a powerful germicide, too.

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THE WELSBACH CORPORATION

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MAGNETIC

DIPPING

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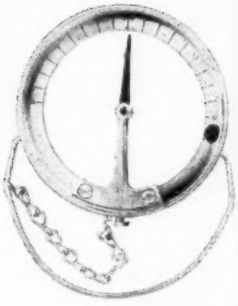

A highly sensitive dipping needle that could save your department many hours of valuable time by locating instantly iron or steel objects that have become covered with snow, earth, concrete sidewalks, brick, pavements, etc. Ruggedly constructed. Jewel movement. Performance proven by water works engineers the world over.

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PRECISION WATERWORKS INSTRUMENTS

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Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years • Leadite joints improve with age.

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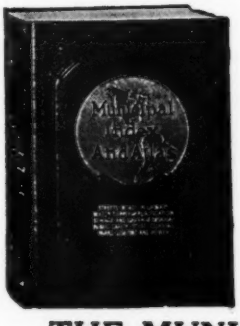
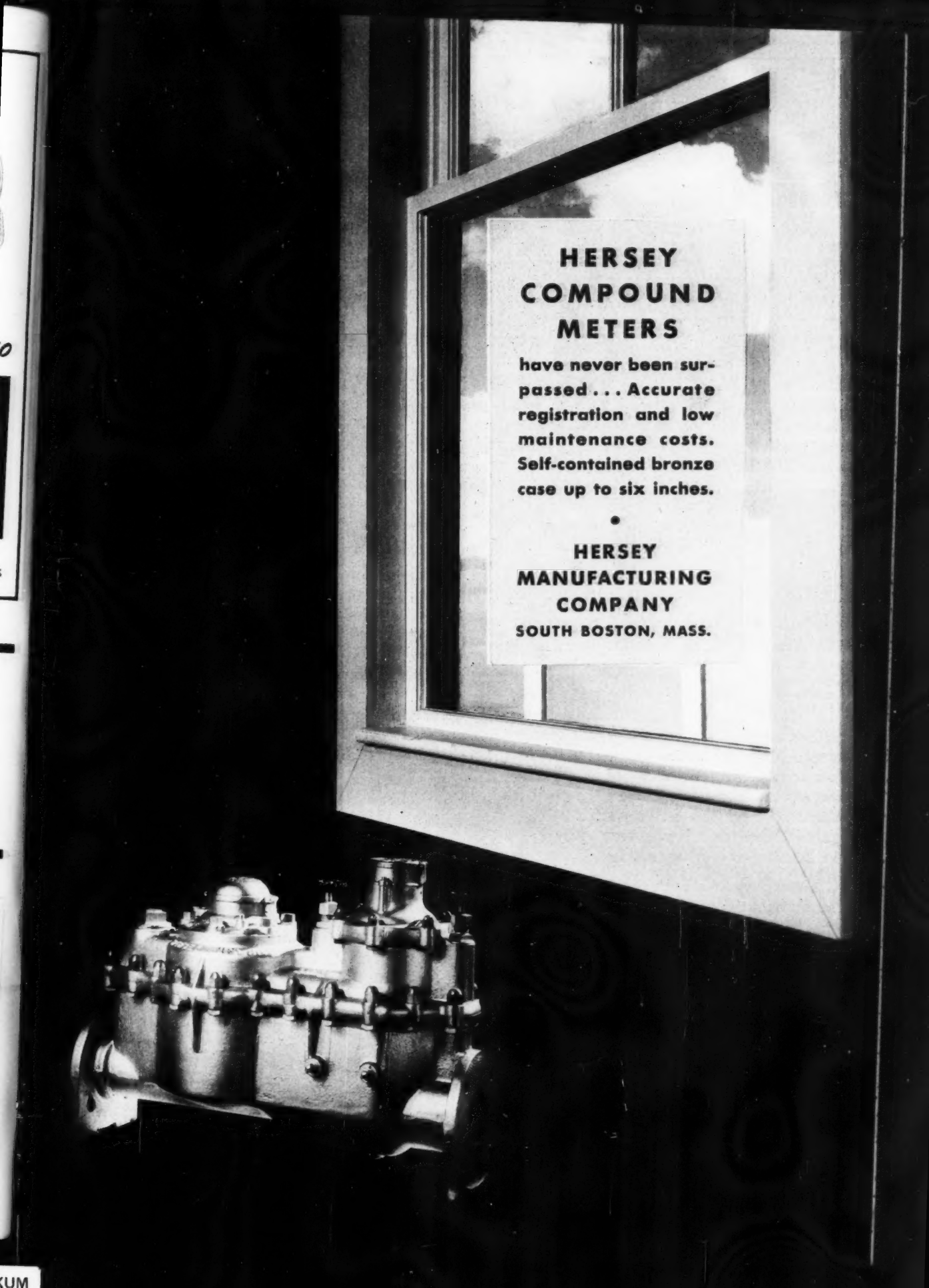


"WHO'S WHO IN MUNICIPAL SUPPLY"

is an important feature of the THE MUNICIPAL INDEX consisting of brief messages to municipal officials from all the manufacturers, who are sufficiently interested in governmental business to contribute a functional statement about what their products can do for city officials. If you do not have the latest Municipal Index on hand please let us know.

THE MUNICIPAL INDEX

470 Fourth Avenue New York 16, N. Y.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COMPOUND
METERS
have never been surpassed . . . Accurate registration and low maintenance costs. Self-contained bronze case up to six inches.
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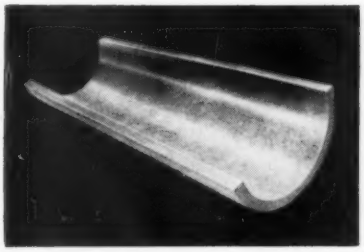
HERSEY
MANUFACTURING
COMPANY
SOUTH BOSTON, MASS.

Engineering Facts about

Johns-Manville TRANSITE PRESSURE PIPE

Carrying Capacity

EXAMINATION of the interior wall of Transite* Pressure Pipe will quickly disclose its uniformly smooth surface. This smoothness, imparted during manufacture by forming each length under pressure on a highly polished steel mandrel, accounts for the high flow coefficient of Transite Pressure Pipe—C-140, based on the Williams and Hazen formula.



The unretouched photograph above shows Transite's exceptionally smooth interior surface—imparted by the polished steel mandrel on which the pipe is made.

Moreover, because Transite is made of asbestos and cement, it is inherently and completely immune to tuberculation. This means that the initial high carrying capacity of this pipe remains high in service—a fact which has been confirmed by accurate Pitometer tests.

One important advantage of Transite's maintained high carrying capacity is the assurance of an ample flow of water for both normal and fire-fighting needs in the years to come. Pumping equipment can be operated closer to peak efficiency; pumping costs can be held to a minimum. Taxpayers can receive the benefits of the favorable fire insurance rates which result from a modern, efficient water distribution system of ample capacity.

Accurate Pitometer tests conducted in the field verify Transite's maintained carrying capacity of C-140.

Another advantage—the engineer may design his water system with pipe of minimum diameter, rather than resort to larger pipe than would otherwise be necessary in order to offset the progressive reduction in flow caused by tuberculation. This practice is not necessary when Transite Pressure Pipe is specified.

As indicated by tests, Transite's *maintained* carrying capacity helps provide the abundant fire-flow essential to adequate protection and to favorable fire insurance rates.

And, of course, since tuberculation is not a problem, the costly expense otherwise involved in cleaning and lining of water mains can be eliminated.

A maintained high-carrying capacity is one of many advantages of Transite—the modern asbestos-cement pipe that was engineered to carry water more efficiently and more economically. For further facts, write for Brochure TR-11A. Address Johns-Manville, Box 290, New York 16, New York.

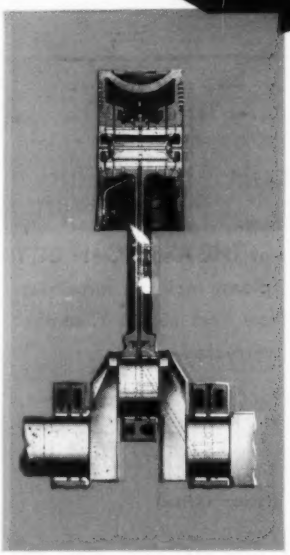
*Transite is a registered Johns-Manville Trade Mark

JOHNS-MANVILLE JM PRODUCTS

SUPERIOR DIESELS

provide . . .

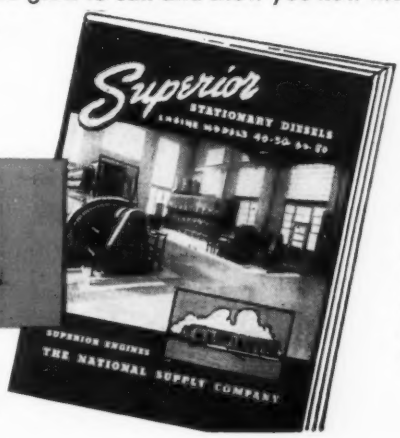
Rock-Bottom Maintenance Costs



On Superior Diesels the lube oil supply is extended to the topmost piston ring, by pressure circulation. As a result, temperatures of piston crowns and rings are *reduced as much as 170° F.!*

This means fewer overhaul jobs because pistons and rings last longer. And oil cooled pistons *eliminate* sprays, jets and extra working parts that need periodic adjustment or replacement. This all adds up to important savings for you.

Superior Diesel Engines have many other features, too. One of our field engineers will be glad to call and show you how they can be used to your advantage.



Send for this Booklet

A new 28 page booklet, "Superior Stationary Diesel Engines" is just off the press. It's packed with facts that tell *how, when and why* Superior Diesel Engines can help you build profits. Write for your free copy today.

Superior DIESEL

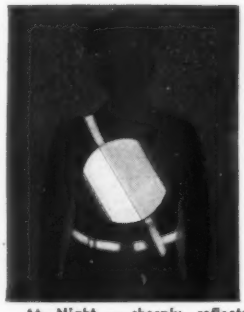
SUPERIOR ENGINE DIVISION OF
THE NATIONAL SUPPLY COMPANY
Plant and General Sales Office: Springfield, Ohio

ACRO-LYTE (Patent Applied For)

THE SUPER SAFETY PATROL BELT

HIGHLY VISIBLE IN DAYTIME
REFLECTOR OF LIGHT
LUMINOUS IN THE DARK

This dressy gray and white belt is highly visible in ordinary light.



At Night — sharply reflects head lights, flashlight or any other flood lighting.

In Total Darkness — glows brightly for many hours after being exposed for ten minutes to half hour in any light.

GAUNTLET

DAYLIGHT

DARKNESS

Webbing covered the same as Acro-Lyte Belt with Reflecting and Fluorescent materials, 3¾" wide. Can be worn as gauntlet or arm band. Adjustable with snap.

Adjustable sizes—Small, Medium, Large.

Acro-Lyte is a special webbing combined with two other fabrics designed particularly for safety purposes.
One is a highly reflective material that can be seen at great distances.
The other material is fluorescent and glows brightly in total darkness for many hours after being exposed to any light.
Acro-Lyte is non-toxic and has been tested under all kinds of weather conditions.

The product is limitless for the purpose of reducing highway accidents and directing traffic, especially at night. Assembled in many salable articles, principal uses of which are

Patrol Belt — **Cuffiet**
Gauntlet — **Webbing in rolls, etc.**

AMERICAN CORD & WEBBING CO., INC.

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We design, fabricate, and erect safe, dependable tanks for the economical storage of propane and butane gas; also tanks for consumer storage. In additon, we furnish industry with elevated tanks, boilers, and pressure vessels of all types. Our engineering department is at your service. Write for our catalog—"Tank Talk."

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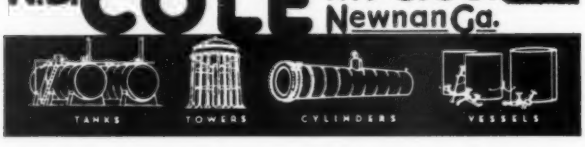
ESTABLISHED 1854



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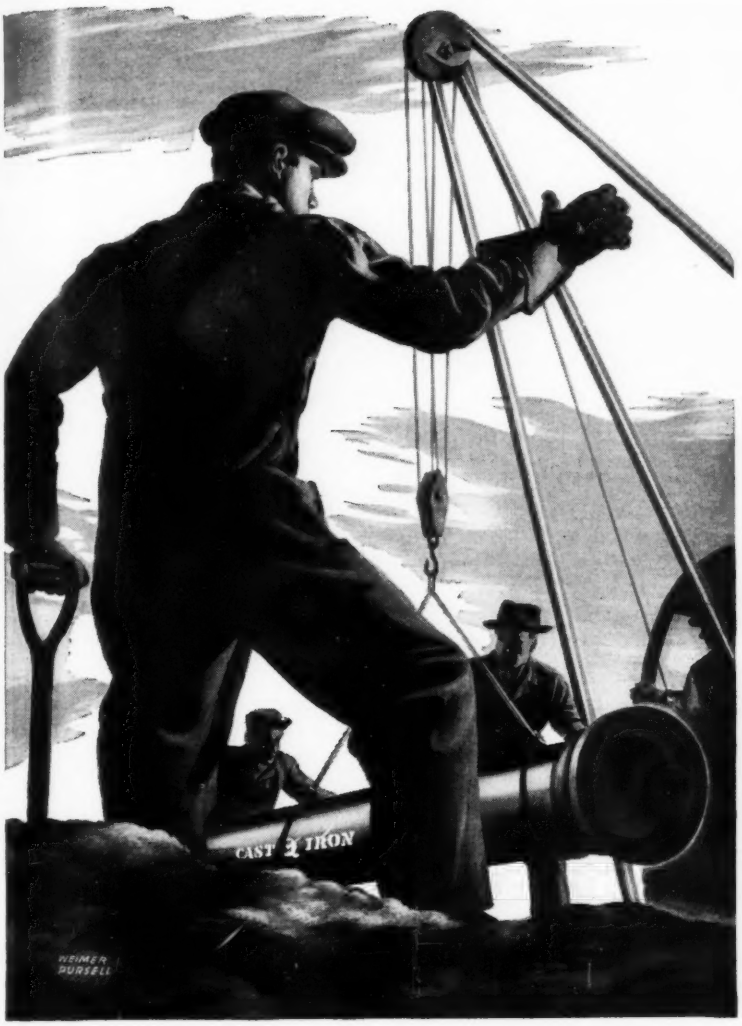

HOW can a ton of water (240 gallons) be collected, processed and delivered to the faucet, for less than a dime?

Because public water supply is a big industry—seven times bigger in tonnage volume than the combined product of all other industries—delivering an indispensable product without a substitute. This is part of the reason but not the big part.

More than half of the capital investment of public water supply systems in this country is in distribution mains, usually financed by bond issues with an average term of 30 years.

If these mains had to be dug up and replaced every 30 years—either because of failure or ruinous maintenance costs—water could *not* be sold for anything like a dime a ton.

But over 95% of all the water distribution mains in this country are cast iron mains with a known efficient life of at least 4 times the average term of an issue of water works bonds.

Cast iron mains go on serving for generations after the bonds issued to pay for them are retired and forgotten—saving millions in avoided replacement costs and millions in maintenance. A big reason why a ton of pure water costs less than a dime is the long life and efficient life of cast iron pipe. Cast Iron Pipe Research Association, T. F. Wolfe, Engineer, 122 S. Michigan Avenue, Chicago 3.

CAST IRON PIPE
SERVES FOR CENTURIES

LOOK FOR THIS MARK IT IDENTIFIES CAST IRON PIPE

NEW TRI/CLAD VERTICAL

REG. U.S. PAT. OFF.

Shielded (dripproof) construction, 1 to 1750 hp, all speeds and frequencies, hollow or solid shaft

HERE'S WHAT YOU WANT . . . AND GET . . . IN THIS NEWEST MEMBER OF THE TRI/CLAD LINE . . .

UNIFORM APPEARANCE . . . Now all the vertical motors in your plant can be uniformly attractive because this new Tri-Clad has the same external features regardless of rating.

DRIPPROOF CONSTRUCTION . . . permits installation outdoors in moderate climates without additional protection.

NEMA STANDARD BASE . . . simplifies design problems, allows easy substitution of new motor on existing applications.

SELF-RELEASE COUPLING . . . automatically disconnects motor from load to prevent damage from reverse-phase rotation or reverse flow. Non-reverse coupling, which allows the motor to turn in one direction only and prevents reverse rotation, is available as a mechanical modification.

ANGULAR-CONTACT BALL-THRUST BEARING . . . handles high thrust without special thrust plate. Motor thrust bearing serves both motor and load.

DOUBLE-END VENTILATION . . . increases motor life, keeps operation uniform.

EASY INSTALLATION . . . Easily accessible lifting lugs and conduit box cut installation time. Nameplate and connection diagram are adjacent to conduit box where you need them.

***PLUS TRI/CLAD* EXTRA PROTECTION . . .** from physical damage, electrical breakdown, and operating wear and tear. Because these cast-iron motors are not at the mercy of a coat of paint, they strongly resist chemical attack and dampness.

GENERAL ELECTRIC

660-50

MOTORS for ALL these VERTICAL Jobs

SEWAGE PUMPING

ASH PUMPING

GRINDING

MIXING

AERATION

CLARIFIERS

SLUDGE COLLECTORS

COMMINUTORS

WATER PUMPING

Many operations in sewage and waterworks plants lend themselves readily to vertical drive because the flow of water and sewage is primarily horizontal through the processes. With vertical drives, pumps may be installed on a lower level, leaving both pump and motor readily accessible, and using a minimum of angular piping. Vertical drives also conserve floor space and couplings.

For these applications you will want a modern vertical motor, one that is designed to harmonize with the driven machine, one that provides a uniformly streamline appearance in all sizes and ratings. General Electric's new Tri-Clad vertical motor meets all these requirements. It can be furnished with either hollow or solid shaft, from 1 to 1750 horsepower.

If your new sewage or waterworks plant is in the "planning" stage, consider the advantages of purchasing all your electric equipment from one manufacturer. It will simplify your designing, buying, installation and service problems. All components of your plant will dovetail together to form an attractive and efficient operation unit. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

CO-ORDINATED WATER-PLANT...SEWAGE-PLANT ELECTRIFICATION

YOU LOSE MONEY RENTING OLD, WORN-OUT COMPRESSORS

BUY or RENT an efficient NEW JAEGER "AIR PLUS"

Save as much as 25% on gas and oil—Put more air power behind your tools — Get cooler, cleaner, drier air — Insure against compressor breakdowns.

IT COSTS NO MORE to rent a new Jaeger than an old fuel-burner — by hour, day, week or month. Call us for any size machine you need.

THE JAEGER MACHINE CO. Main Office, Factory Columbus, Ohio

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Traffic Signal Controllers For Sale

About 50 Tokheim Cut 1514 Induction-Driven Controllers, 110 volt A.C. 60-cycle, in weatherproof cabinet for wood pole mounting, just removed from continuous operation, Dayton, Ohio.

We will sell these controllers (without guarantee) in lots of 5. Price per controller $10.00, if picked up at our warehouse.

THE WAGNER-SMITH COMPANY
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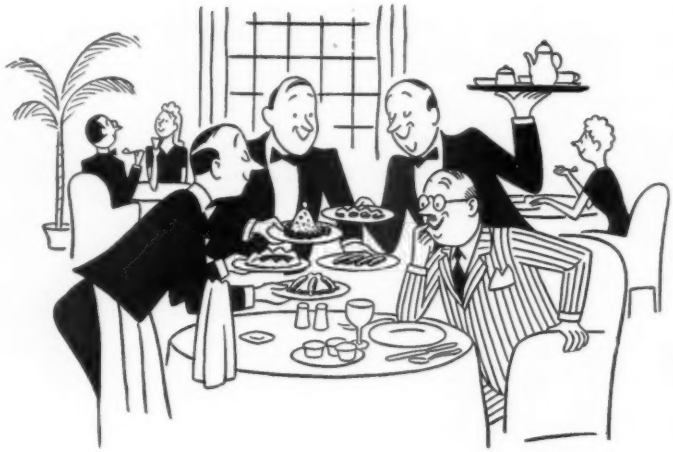
Eenie . . . . meenie . . . . minie . . . . mo . . . .



IT DOESN'T matter which dish you select at a Statler Hotel. They're *all* delicious!

In addition to superb food, you'll find large, oh-so-comfortable rooms . . . efficient, friendly service . . . the sincere warmth of Statler hospitality.

At moderate rates.

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NEW YORK (Hotel Pennsylvania)
PITTSBURGH (Hotel William Penn)

What a Haiss Snow Loader does for many cities . . . and can do for you!

- *One machine does the work of 80 men* shoveling snow by hand.
- *Pays for itself* each winter—100% return on investment annually.
- *Dependable*—available any hour, night or day, at a moment's notice.
- *Fast*—cleans up congested traffic areas in a few hours.
- *Loads* 15 yards a minute.
- *Reduces* truck rentals $200 to $300 or more per 8-hour shift.
- *Breaks up* and handles hard and frozen snow better than any other machine—due to chopping action and upward lift of cutting blades.
- *Mobility*—changes location quickly—6½ miles per hour traveling speed.

Haiss is now a wholly-owned subsidiary of Pettibone Mulliken Corporation of Chicago. With new management and much larger resources, Haiss can now do a still better job for its customers . . . better machines and servicing, larger production, quicker deliveries.

Haiss specializes in equipment to load bulk materials . . . snow, sand, gravel, stone, coal, topsoil, etc.

Its machines are money-makers for their owners.

George Haiss Manufacturing Co.
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CONCRETE PAVEMENT

built for 1912 traffic . . .

Still carries today's traffic loads at low annual maintenance cost

CONNERSVILLE, INDIANA, has 58 blocks of concrete streets paved between 1912 and 1915, when traffic was mostly horse-drawn and motor vehicles were a novelty. After carrying increasingly heavy traffic for a third of a century, that pavement is still giving economical service. City Engineer J. D. Nash writes:

"Maintenance costs are still very low, requiring an average annual maintenance of approximately 1¾ cents per square yard. Maintenance consists mostly of keeping the joints in first-class condition, since in most cases, the streets are structurally good. This job requires about three hours per block per year for five men.

"Seventh Street is one of the oldest streets in town and is used as much as any other street in the business section, yet the maintenance, over a period of years, is the same as for some of the newer streets."

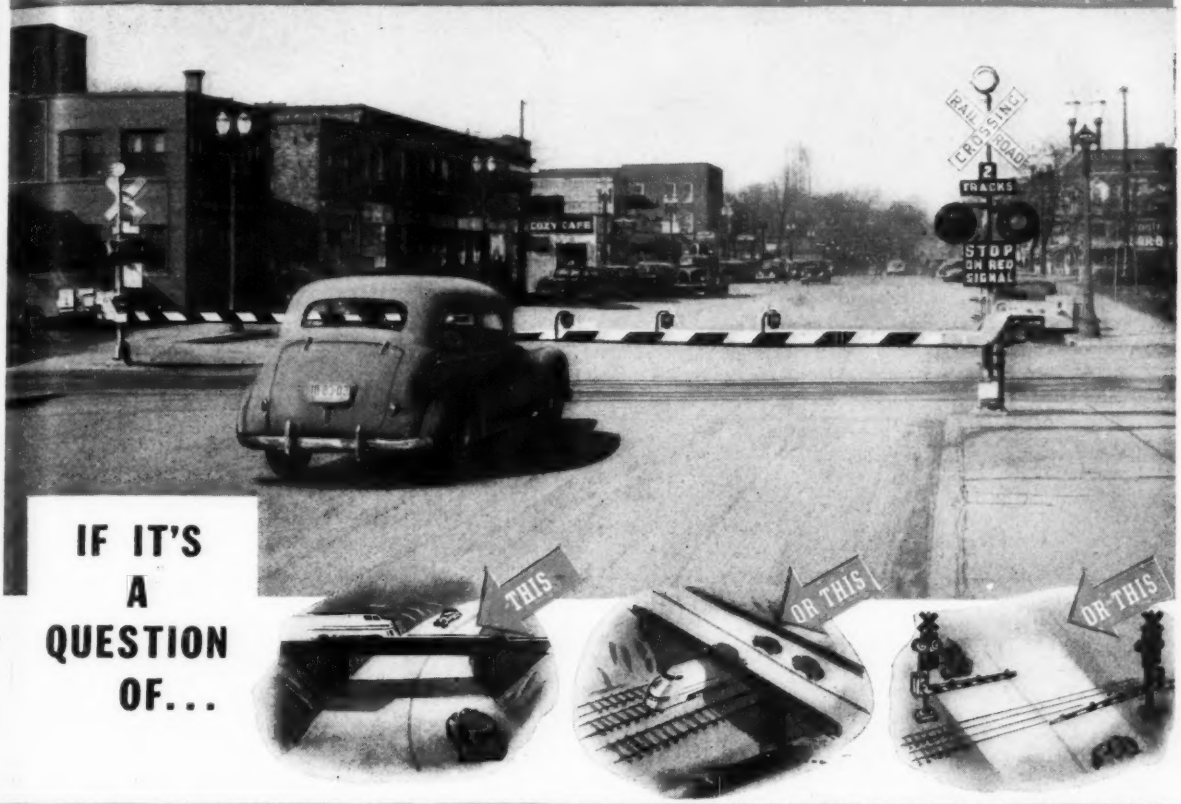
For help in planning your next street-paving project, send for a free copy of "The Design of Concrete Pavements for Municipal Streets." Distributed only in United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. A12-4, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

ON THE LEVEL ... IT COSTS MUCH LESS!



IF IT'S A QUESTION OF...

HERE'S YOUR ANSWER ... ON THE LEVEL

Model 10 THE MODERN WAY HIGHWAY CROSSING SIGNALS

U.S. Patent Numbers
2,137,196
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Patented in Canada 6-27-39
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WRITE FOR BULLETIN C1L-AC12

- ★ Model 10's offer *immediate* safety at MANY crossings, for less than the cost of ONE grade separation.
- ★ Model 10's provide *automatic, unfailing* operation — closed circuit principle.
- ★ Model 10's ensure positive protection 24 hours a day. Eliminate "human element."
- ★ Model 10's effectively safeguard against "second train" accidents.
- ★ Model 10's facilitate a fast flow of traffic.

MODEL 10 HIGHWAY CROSSING SIGNALS ARE THE PRODUCT OF

WESTERN RAILROAD SUPPLY CO.

Designer and Manufacturer of Safety Devices for Railroads

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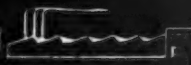
INTERNATIONAL STANDARD ELECTRIC CORP., 67 BROAD ST., NEW YORK 4, N. Y.

CERTIFICATE OF MERIT for Safety AWARDED WESTERN RAILROAD SUPPLY CO. BY THE NEW YORK MUSEUM OF SCIENCE AND INDUSTRY

Your City, Too,

Can profit by snow- and ice-free streets!

Icy pavements and snow-filled streets hamper business, cause accidents to pedestrians and vehicles, endanger lives of school children. Continuous storms create fuel shortages, cut vital public services. Yet many cities now enjoy snow-and ice-free streets thanks to STERLING *"Auger-Action"* Rock Salt. It removes snow and ice, saves lives and property... keeps business and industry humming  and time, labor and money are saved with clean quick-acting STERLING Rock Salt. *ORDER NOW!* In carloads - bulk or 100 lb bags. A trained representative will gladly call. *Write Today!*

International Salt Company, Inc. Scranton, Pa.

STERLING
Auger-Action
ROCK SALT

LANDMARKS

. . . in beautiful Evanston, Illinois

Year after year LUDLOW Hydrants continue to guard life and property in thousands of communities all over the country. Landmarks of security, they are accepted by residents as a part of the traditional American scene.

LUDLOW Hydrants are faithfully serving 90% of all Evanston. Always ready with quick water for any emergency, they provide proper shut-off without water hammer — correct drainage — easy inspection and servicing.

THE LUDLOW VALVE MFG. CO., INC.
TROY • N. Y.

At right — LUDLOW List 90 Slide Gate Hydrant, embodying all the latest improvements in manufacture.

LUDLOW HYDRANTS & VALVES

SINCE 1866

H-72

How to Increase Revenue

... in spite of fixed rates ...and soaring costs

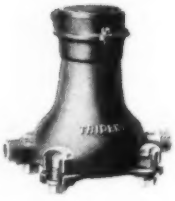
Another "Proof of the Pudding"

The Water Department of a certain city in Illinois, decided to test and repair a group of 5/8" water meters that had not been examined for 26 years. Upon restoring them to service, about $4.30 per quarter was added to each water bill.

Immediately, the Department was flooded with "high bill" complaints. Service men reported the chief cause to be toilet leaks, averaging 1/3 gpm. This leakage totaled 43,200 gallons per home per quarter — all water WASTED, and previously NOT PAID FOR, because of insensitive water meters. Letters to water users explained the extra charges and brought speedy repairs, resulting in 99% of all bills dropping back to normal—AND DOWN WENT UNACCOUNTED-FOR WATER, AND DOWN WENT PUMPING COSTS.

This is another illustration of the way cities can combat rising operating costs and can make and save money through a program of meter testing and repair. Your Trident representative will be glad to help you install such a program.

Trident Water Meters



Trident Water Meters are easily and economically repaired, because all parts are interchangeable. New modern parts fit old Tridents even those in service for 40 years; and a small stock of interchangeable parts will take care of a large stock of Trident Meters.

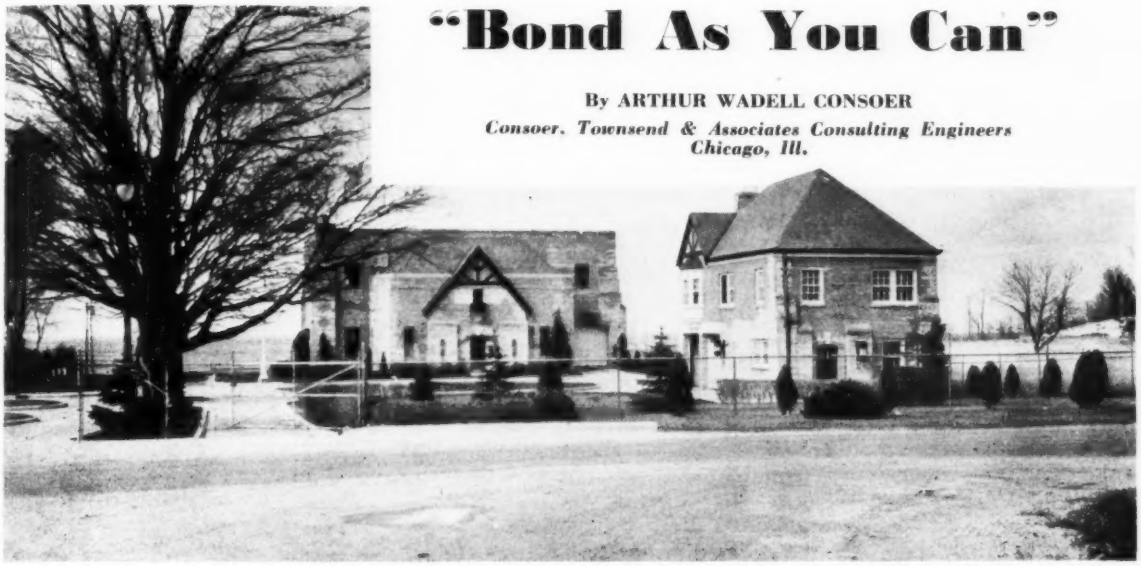
NEPTUNE METER COMPANY • 50 West 50th Street • NEW YORK 20, N. Y.
Branch Offices in Chicago, San Francisco, Los Angeles, Portland, Ore., Denver, Dallas, Kansas City, Louisville, Atlanta, Boston.
NEPTUNE METERS, LTD., Long Branch, Ont., Canada

176

Volume LXII Number 12
DECEMBER 1947
The American City

"Bond As You Can"

By ARTHUR WADELL CONSOER
Consoer, Townsend & Associates Consulting Engineers
Chicago, Ill.



The water works at Grand Rapids, Mich. The building of this plant was made possible by using the principles advanced by the author of this article.

Careful financial programming using a multi-stage construction program becomes as important as the design of the improvement itself

SINCE World War II, we have witnessed a worthwhile program of advance planning of public works, though the construction stage has been reached on only a relatively small part of this large planning effort. Most municipal officials and the general public, too, are favorably impressed by such planning activity, but there is an understandable reluctance on the part of most cities to issue bonds to allow construction to proceed.

These deterrents are well known. They include high construction costs, unwillingness to sponsor public works when housing of all types is so desperately needed, rising tax rates due to increased governmental costs, lack of confidence in the estimates of construction cost, competition among civic groups and governmental officials for allocation of available funds and bonding power, continuing inflationary trends and hope for future lower construction costs, and the usual delays and inertia that so often hinder action in the public works field.

Delayed Financing

No one can quarrel with the view of public works officials that, at least in a period of full employment, they should refrain from sponsoring excessive investments in public works that are not immediately necessary. On the other hand, it is defensible to plan public works, particularly in the municipal utility field, for future expansion and to limit present construction to satisfying pressing demands for more service, for needed replacements of wornout plants, for new equipment, and for construction that will reduce annual costs.

Neither can there be too much fault found with a plan for financing part of a program for major improvements by acquiring reserves earmarked for specific construction purposes. Very few public bodies find it either feasible or legal, however, to create and maintain such reserves for future construction, even though that method of financing the construction of public works eliminates interest payments to bond holders.

It would seem, therefore, that it is best to plan wisely for future needs and then to "bond as you can." This results in a multi-stage construction program carefully coordinated with both present and future service needs, anticipated obsolescence of plants and equipment, bonding-power restrictions, and economy of construction.

Engineer's Part in Planning

The engineers serving public bodies can make a real contribution to the public welfare by helping to formulate future construction plans correlated with

Financing important improvements such as this requires as careful study as the design itself. This shows a Lock-Joint pipe line being installed in Grand Rapids, Mich.

present and future provisions for financing such work. The financing plan can be confined to a series of bond issues or can consist of a combination of bond issues and dollar or invested reserves. For most situations the financial planning is just as important as the planning and preparation of contract drawings and specifications for future public works.

Construction and Financing

In 1938 the City of Grand Rapids, Mich., undertook the construction of a new water-supply system with Lake Michigan, 30 miles distant, as the source of supply. Mayor G. W. Welsh laid down as a requirement in the planning a provision that water rates would not be increased. The total 1938 program represented an investment of about $5,000,000, which was provided roughly as follows:

PWA grants	$1,800,000
Contributions by WPA	600,000
From city surplus water funds	400,000
From sale of water revenue bonds	2,200,000
Total	$5,000,000

Necessarily the scope and extent of the improvement program was limited to bare essentials, but it has sufficed to meet the water-supply needs of Grand Rapids and its environs for nine years without additional construction.

Heavy increases in industrial, commercial, and domestic water use developed during the war have continued in the post-war period. Now the city is contemplating its second program of water-supply improvements estimated to cost about $4,000,000, and again with no increase in water rates except for outside customers. It is felt that outside customers should bear their pro-rata share of financial and operating expenses, including a contribution toward "fair rate of return on net worth," which is not asked for from intra-city consumers. In connection with this point, a rate study and report were made recently, and negotiations with outside customers are in progress.

The recent preliminary engineering report, supplementing one made prior to the 1938 construction, made recommendations for present improvements that are needed, as well as future requirements which, it is believed, can be largely paid for out of the increased earnings anticipated with the expansion of present water-supply facilities.

Water and Sewer Services in the Same Trench?

THIS practice is acceptable in North Dakota under certain special conditions. The State Plumbing Code provides that all water and sewer installations be made in separate trenches at least 10 feet apart and that the material for the sewer be vitrified clay tile or cast-iron soil pipe with leaded joints.

Water and sewer lines may be placed in the same trench at any time when the material for the sewer is cast-iron soil pipe with leaded joints. In this case, the sewer must be placed at least a foot below the water-service line and the water-service line must be laid on a shelf or on solid tamped ground.

When digging two trenches is not feasible on account of soil conditions, and the expense of cast-iron pipe is a factor, water and sewer services may be placed in the same trench provided the sewer piper be long-bell, extra-heavy vitrified tile pipe with hot-poured joints. The sewer pipe still must be placed at least a foot below the water service and the water service must be placed on a shelf or on solidly tamped earth.

This latter type of installation is not recommended except under the most extreme conditions. The savings are not great. The cost of extra-heavy long-bell tile is greater, material for poured joints comes higher, and in placing the water service on a shelf or solidly tamped earth, more labor is required.

These points were made by Bernard Thompson, secretary of the State Plumbing Board, Bismarck, N. D., in a paper delivered before the annual meeting of the North Dakota Water and Sewage Works Conference, Grand Forks, N. D.

Some November Election Highlights

ALTHOUGH the November 4 election results showed that voters are generally willing to approve bond issues for municipal improvements, no clear-cut trends could be observed from the voters' actions on other city charter and reform proposals.

Charter Changes

One of the major city charter changes adopted was that in Richmond, Va., where the voters approved the council-manager plan of government as recommended by the charter commission. This action to eliminate the cumbersome bicameral legislative machinery now in existence is still subject to the approval of the state legislature.

Another important development was the approval, by a vote of 10,101 to 7,455, of a plan to consolidate the overlapping town and city governments of Stamford, Conn. This was the fourth time in 46 years that the measure had been put to a vote. The new charter creates a single city government, headed by a salaried mayor and a board of 40 unsalaried representatives—2 from each of the 20 districts. It is estimated that elimination of the dual governments will save a total of more than $100,000 annually. Most of the vote for consolidation came from the city, the densely populated urban area included in the larger limits of the town. Civic organizations are now studying methods of improving and effectuating the adopted plan.

In New Hampshire, Portsmouth and Keene both adopted the council-manager plan of government. In Portsmouth, with 15,000 population, the approval of the plan was by a 45-vote margin, determined only after a recount. Manchester, N. H., however, defeated the plan.

Massachusetts voters in Medford, Worcester, Revere, and Quincy adopted the Plan E form of government, providing for the council-manager plan, together with the proportional representation method of voting for both council and school board, but Fitchburg and Pittsfield turned down the Plan E proposal.

Although the proportional representation plan was voted down in New York City and Long Beach, N. Y., and in Boulder, Colo., Cincinnati voters decided for the third time to retain it, this time by a vote of 81,365 to 73,638.

In Denver, Colo., a much-publicized proposal for a new city charter, providing for a strong-mayor form of government, was rejected. Cozad, Nebr., voted against adopting the council-manager plan.

Approval was given to more than 95% of the bond issues submitted to the voters on November 4, *The Bond Buyer* reports. The final tabulation shows approximately $1,100,000,000 of new borrowing voted. This figure, of course, includes the three big state issues—$400 million for a New York State bonus, $300 million for an Ohio bonus, and $135 million for New York State housing aid.

City Bond Approvals

Some of the larger city bond issues approved were more than $87 million for San Francisco, Calif.; $41.5 million for Kansas City, Mo.; $39 million for Chicago, Ill., and $30 million for Detroit, Mich.

Six separate bond proposals were voted on in San Francisco, including issues of $25 million for water mains, $22.8 million for street improvements and traffic signals, $20 million to partially modernize the municipal railway, $12 million for playgrounds, and $5 million for off-street parking. An interesting development of the election was the decision of San Francisco's citizenry to retain the famous and likeable, but anachronistic, system of cable cars used on the steep streets of the city.

Slum clearance and housing received the go-ahead signal from Chicago voters, who approved bond issues of $15 million as a fund to acquire slum land for resale to private developers, and $15 million to rehouse persons displaced by the slum-removal projects.

In Kansas City, the bond proposals that were voted (amounting to $41.5 million) provide for a wide range of general improvements and for airport construction. The Detroit bond issue will be used for financing storm-sewer construction.

Some other approvals of large bond issues included the following: $1.95 million, sewer construction, Warren, Ohio; $1.3 million, sanitary and storm sewer, Great Falls, Mont.; $4 million, water-system improvements, Winston-Salem, N. C.; $3.75 million, construction of terminal facilities, Sacramento-Yolo Port Dist., Calif.

The elaborate superhighway project for Fort Wayne, Ind., was one of the rejected municipal improvement proposals. Despite the support of federal, state, and city administrations, both newspapers, and many civic groups, the referendum vote was 15,418 for and 24,844 against the proposed expessway. Sympathy for property owners who would be dispossesed by the project was said to be an important factor in the final results.

ASSOCIATED PRESS WIREPHOTO

Mayor-elect Elmer E. Robinson and his wife walking in San Francisco recently as a cable car passed. Both Mr. Robinson, former Superior Court Judge, and the cable cars won when the city elected a new Mayor and voted to retain the cars.

Canton, Ohio, Studies

Garbage - Sewage Treatment

An engineering study shows a dollar-and-cents savings that Canton can receive by grinding its garbage and treating it in a new, conveniently located, activated-sludge sewage treatment plant

CANTON, Ohio, when it rehabilitates its present sewage treatment works, can save $11,000 a year if it abandons hog-feeding and grinds the garbage, treating it in a new activated-sludge sewage treatment plant.

This is the substance of an opinion expressed jointly by Alvord, Burdick & Howson, Chicago consulting engineers, and Charles C. Hommon, consulting engineer of Canton, when studying Canton's sewage treatment needs. The conclusions resulted from a detailed study of eight separate ways that Canton could meet these needs.

Canton's sewerage system separates the sanitary wastes from the storm water. The sanitary sewage is collected by means of intercepting sewers and brought to a single location, where the 39-inch segmental block sewer picks it up and takes it to the treatment plant. The plant uses Imhoff tanks and trickling filters. The digested sludge is discharged in liquid form into irrigation ditches on a 550-acre city-owned farm.

Present Plant Satisfactory

Canton's present treatment plant, a veteran in the sanitary engineering field, consists of a set of Imhoff tanks built in 1914 and 1915 with trickling filters, converted from contact beds and Imhoff tanks, added in 1926. The designers, stung by the nuisance the previous plant, set inside the city limits, had created, and lacking the knowledge that later experience furnished, set this plant six miles away from the city. While they physically removed the sewage treatment problem from the Canton doorstep, they did not make the treatment any easier. The sewage became stale and hard to treat. It became loaded with hydrogen sulphide that gradually ate into the sewer lining, produced strong, revolting odors, and actually damaged the plant.

Nevertheless, the plant has given consistently good results with the stale, hard-to-handle sewage. Over its 18 years of operation it has reduced the oxygen demand of the sewage by 86%, discharging an effluent with only 20 ppm BOD. It has removed an average of 78.5% of the total suspended solids in this 18-year period.

On the other hand, the plant has had many operating difficulties characteristic of older plants. The Imhoff tanks have inadequate sludge digestion capacity. The sludge frequently foams and at times even overflows the tanks.

The fly nuisance is another problem, traditional at all trickling filter plants. At Canton, the flies move in mass formation and actually drive the operators from their posts.

Odors are another problem. In summer, the stale sewage unloads its hydrogen sulphide from the trickling filters into the atmosphere. It puts out concentrations so strong that the plant has been damned as a nuisance by people using the highway bordering the plant. These odors were primarily responsible for the purchase of 550 acres of farm land by the city in the area east of the plant, in order to dispose of the sludge.

The stale sewage also has gone to work on the concrete structures in the plant. The disintegration takes place above the water line, where the hydrogen sulphide gases are the strongest.

The manually cleaned bar screens provide another expensive and disagreeable operation. The plant still has to rely on the questionable practice of cleaning the screens by hand and hauling the screenings away to be buried.

The long interceptor sewer imposes another limitation on the capacity of the system. The rule conventionally followed and found to be sound is, the maximum hourly flow of a system will equal 2¼ times the average daily flow. At present Canton contributes sewage at the average daily rate of 10.7 mgd. To be adequate at present, the interceptor sewer should be able to carry 24 mgd, or 33 1/3% over the 18 mgd which is its top capacity.

Future Requirements

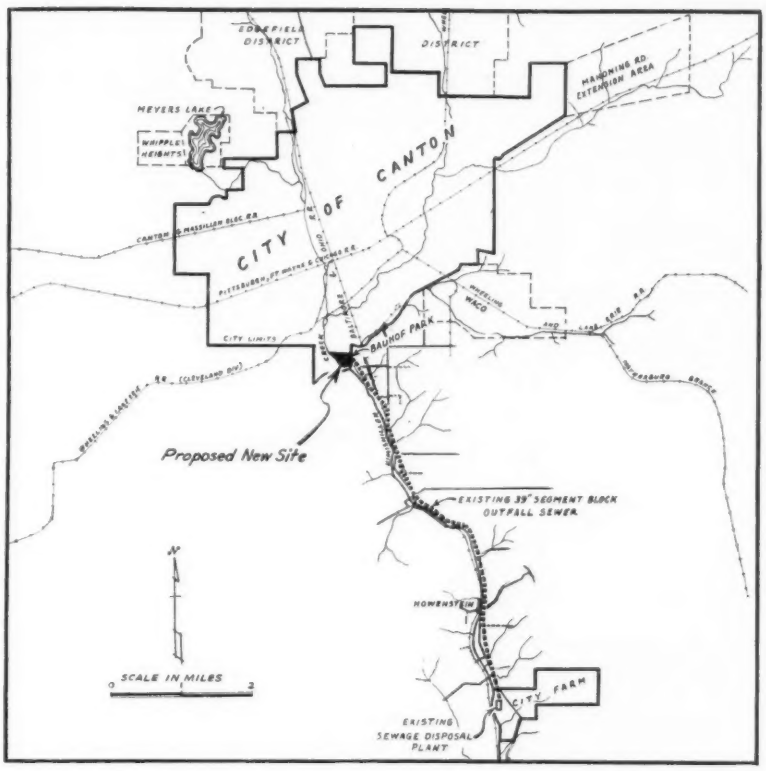
It is anticipated that by 1970, a 54-inch sewer will be required to carry the 49 mgd probably discharged by then. This would have to be supplemented by another in 1970 to meet the new load. The designers recommended, therefore, that the proposed intercepter be boosted in size to 60 inches to make it adequate on a really long-range basis. The added cost, incidentally, would be only 10 to 15% and would make the sewer adequate for hourly flows 50 to 60 years hence.

The engineers carried their studies forward to show eight ways of overcoming these difficulties. These are:

1. Enlarging the present plant.
2. Revising the present plant to use high-rate filters.
3. Constructing an activated sludge plant at a new site within city limits, disposing of sludge on drying plants at another site.
4. Constructing an activated sludge plant at a new site within city limits, pumping raw sludge to the old site for digestion and disposal and returning the gas for power utilization.
5. Constructing an activated sludge plant at a new site within city limits, pumping digested sludge to the farm for disposal in liquid form, and utilizing the digested gas for power.
6. Construction of an activated sludge plant at a new site within city limits, pumping raw sludge to the old site for digestion in existing Imhoff tanks.
7. Construction of an activated sludge plant at a new site, dewatering sludge by vacuum filters.
8. Construction of an activated sludge plant at a new site within city limits, and filtering and drying the activated sludge on the spot.

Recommended Site

The proposed site inside the city is in a convenient area known as the Bauhof Park. Back in 1894, Canton built one of the pioneering sewage treatment plants in this country, designing it around the use of chemical precipitation. With little known about handling or digesting sludge, the plant ultimately became an odorous nuisance. In 1914, the city decided to abandon it and to build its new plant far out in the country. The new site, therefore, actually has seen sewerage service before. Its location, incidentally, is convenient to garbage collection work.



This map of Canton and the vicinity shows the distant, awkward location of the existing sewage treatment plant and the convenient site of the new plant, both in regard to the collection of sewage and the disposal of garbage.

Of the eight plans, all except the first, third, and fifth eliminated themselves by economic analysis. Of the three remaining, plan five required the lowest first cost, running into $1,517,000. The annual cost, however, amortizing the bonds at 2% interest, ran $7,000 higher than plan one and $3,000 lower than plan three.

Plans three and five are so close to the same cost that for all practical purposes they may be considered identical. The only difference between them is in consideration of their operating features. The fifth plan, utilizing the present practice of sludge irrigation or lagooning at the farm, has the advantage of utilizing Canton's past experience and facilities for sludge disposal by means which require the least operating labor.

Plan one, the enlargement and rejuvenation of the existing plant, is the highest of the three in construction cost. Its estimated $1,708,000 includes a new 60-inch outfall sewer which represents approximately half the total expense. Since it does not avoid the present difficulties of stale sewage, troublesome filter flies, and possible odors, the plan does not eliminate any of the inherent difficulties. In the last analysis, plan five stands out as the best.

This plan, utilizing an activated sludge plant, will not involve any such nuisance problems as did the old 1894 sewage treatment plant. Sanitary engineers have demonstrated that they can control sewage odors in this type of plant. Its utilization of digester gas will furnish an added source of power and revenue that makes the plan even better. Bauhof Park has sufficient space available to make the plant usable until Canton becomes a city of 500,000.

With the type of treatment selected, the engineers next explored the advisability of combining garbage with it. At present, the city disposes of its garbage by feeding it to hogs on a ranch five or six miles away. The city collects the garbage in the cans on a once-a-week basis and delivers cans and all to the ranch, leaving a clean can at the point of collection. At the farms the cans are cleaned and brought back to the city. A total of 16,000 tons of garbage per year are disposed of in this manner. By 1960, this amount will probably be 20,000 tons.

The city furnishes garbage service at a flat rate of 50 cents per month, plus $1.00 per year rental for the can. Hotels and business houses obtain this service at a flat rate of 10 cents per can. This rate produced a revenue of $116,000 in 1944. Of this, the garbage department spent $106,000 doing the work of collection, can-cleaning, and disposal, producing a favorable balance of $10,000. This will probably be wiped out when the city negotiates for a new can-cleaning contract which will increase the cleaning cost by 50%.

Using these figures, the engineers have estimated the 1960 costs of garbage disposal, based on a proportionately larger population, to be $135,000.

It would be possible, on the other hand, to construct a grinding plant in Bauhof Park which would discharge the ground garbage either into the outfall sewer or into a sewer to be connected with the projected sludge plant.

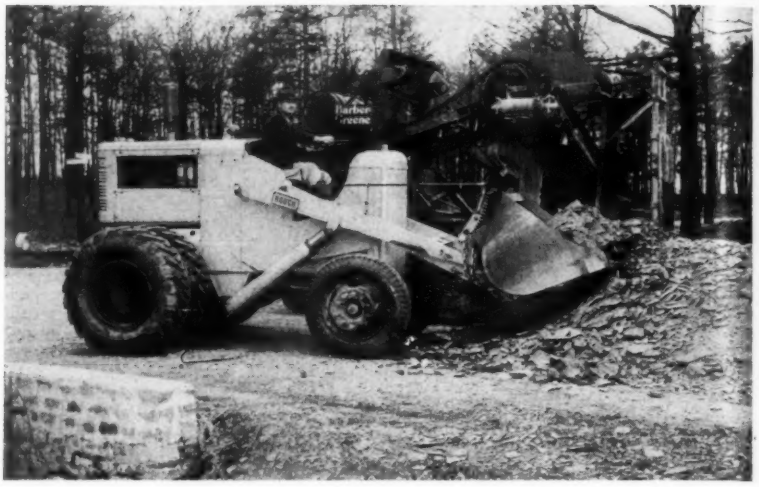
Such a garbage-grinding plant would, of course, require additional sludge capacity in the sewage treatment plant. In the activated sludge plant, the digestion tanks should be increased from 4½ cubic feet per capita to 7 cubic feet per capita. In the Imhoff tank plant at the present site, the sludge digestion capacity should be increased from 3 cubic feet per capita to 5½ cubic feet per capita. There likewise would be greater costs involved in pumping the sludge, because of the added volume of the garbage solids.

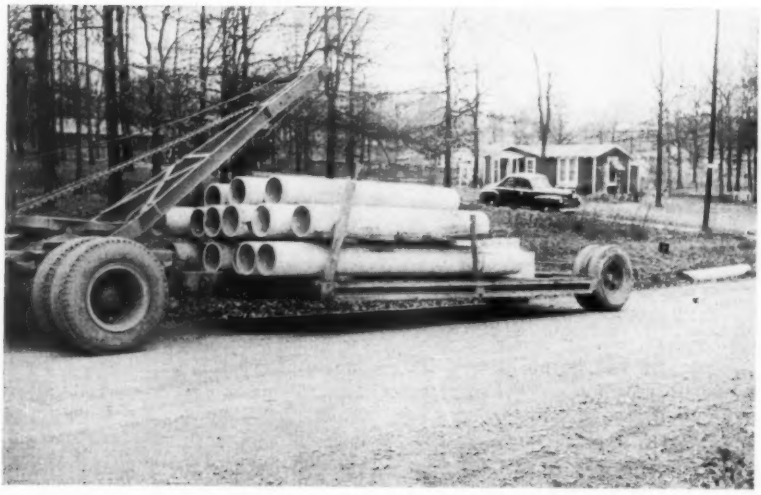
This added cost would be offset to a measure by the increase in gas production from the organic material in the

(Continued on Page 96)

War-Deferred Pipeline Construction Under Way As

Little Rock Catches Up





PIPELINE construction reached an all-time high in Little Rock, Ark., last year. L. A. Jackson, water works manager-engineer, reports that total expenditures for water-main installations during the last fiscal year reached approximately $530,000. This extensive program was necessary because of curtailment of construction during the war years, which resulted in serious deficiency of service and a system inadequate to meet present demands.

One of the principal projects undertaken includes the construction of a primary feeder line from the filter plant to and through the principal mercantile area, together with secondary feeders around the high-value district. The total project included the installation of 6 miles of pipe ranging between 12 and 24 inches in diameter. In addition to this, there were reinforcing mains that brought the total length of pipe in the system to 270.5 miles. Other construction

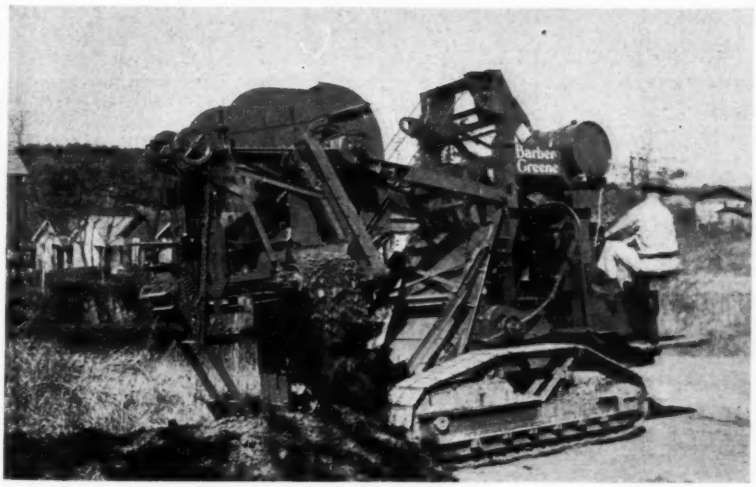
Top: Little Rock thinks it easier and cheaper to load dirt with a Hough Payloader than to use hard-to-get labor. Center: A load of 12-inch Transite on a city-owned Martin Carryhaul trailer. Bottom: The Caterpillar D2 tractor, equipped with a LaPlant-Choate bulldozer, crowds the dirt into the open ditch. Bottom right: The new mains do improve pressures, and this shows a 20-inch main being flushed from the top of a fire hydrant.

activity included the installation of 105 fire hydrants, 699 services, five 6-inch fire services, 299 valves, and 508 meters.

A new Barber-Greene trenching machine took its place among city-owned construction equipment used in the pipeline installations. The water department has been able to speed its trench backfilling by using a small diesel Caterpillar tractor with a LaPlant-Choate bulldozer blade. In order to pick up and load dirt more easily, Manager Jackson calls into action his Hough Payloader shovel and uses a low-loading Martin Carryhaul trailer to transport quickly anything from tractors to pipe.

The flow and pressure tests conducted after the new pipelines went into operation showed how the water distribution service had been stepped up and generally improved. Fire flows were increased approximately 100% in the high-value district. Available flows are roughly 50% greater than required at present.

PLEASE BEAR WITH US FOR THE
SHORT DURATION OF THIS WORK
The City's Growth Necessitates
This Inconvenience
LITTLE ROCK MUNICIPAL WATER WORKS



Top: A lesson in good public relations. Center: It only takes a couple of workmen and an operator of the Northwest backhoe to lay a water main. But there is no shortage of "superintendents." Bottom: One man on a Barber-Greene ditch digger is all that is required to keep ahead of the pipe-laying crew. The ditcher sees a lot of service while the Little Rock Water Works catches up with war-deferred construction.

Despite a rate reduction of 6% on the first 100,000 gallons that went into effect in November 1945, and despite the fact that water sales had decreased during the year because of reduction in wartime accounts, the revenue to the department has continued to show an increase. During the last fiscal year it rose by 11%, principally because of the increased number of small users. Since April 1936, when the system became municipally owned, the number of water users has increased by nearly 6,400, or roughly 40 percent.

The Little Rock Municipal Water Works is operated by a Board of Water Works Commissioners. The Board consists of P. J. Pickens, chairman, W. W. Johnson, and Hugo W. Norvell. L. A. Jackson has been manager-engineer ever since the water works has been under municipal management.

April 1946 was the tenth anniversary of municipal operation of the water utility. Manager Jackson, in his 1947 report, summarized some of the progress made during this period.

A new water supply of favorably soft and pure characteristics was developed.

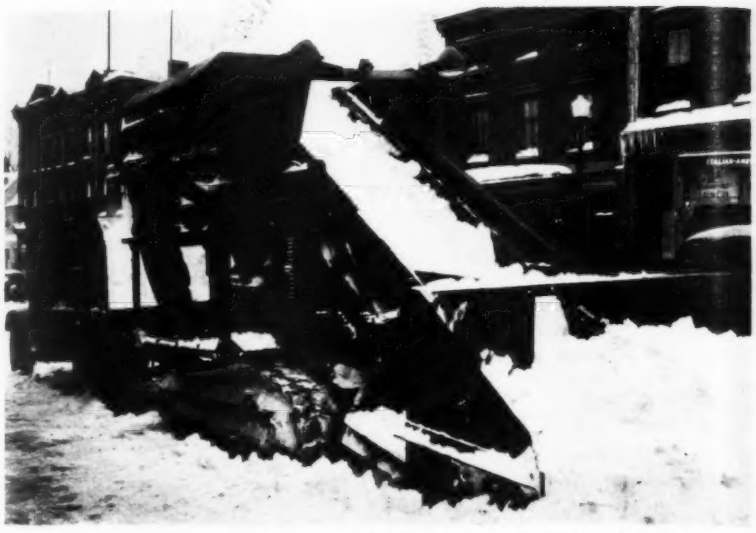
Charges for private fire protection within the city limits have been entirely eliminated.

Two rate reductions have been placed in force, a total average reduction of 22%, representing annual savings of $150,000 to all classes of water consumers.

City accounts, including fire hydrant rental, have been reduced 33 1/3 percent. Number of water users has increased 39 percent. Water processed has increased 66 percent. Total annual revenues have increased 42 percent.

Scooping Up a 17-Inch Snow

The villages of Tarrytown and North Tarrytown, N. Y., buckle into their heaviest snow with an assortment of mechanized equipment



Tarrytown uses this loader with the depressed bucket elevator.

LAST February, the eastern seaboard area had the worst blizzard that it had experienced in many years, with a concentration of heavy, damp snow that was complicated by continuing cold weather. The experiences of the two suburban communities of Tarrytown and North Tarrytown, separated only by the existence of a township political boundary, are typical of the way that the smaller cities met and overcame this emergency.

North Tarrytown prefers this loader with the high bucket elevator.

Both these communities rely on equipment for snow fighting that they can use both in winter and summer. They keep a set of snow plows housed so that they can be attached immediately to the various trucks which are used for other purposes. They also have established a working agreement with a local sand and gravel company so that they can call on its fleet of trucks for plowing and for snow-removal purposes if needed.

Both communities use a Barber-Greene loader to clear the snow off the streets after it has been piled into the gutters by the plows. The North Tarrytown loader has a higher elevation than the Tarrytown unit and can fill large-capacity trucks with high sideboards. The Tarrytown loader, however, is better able to maneuver through the wooded residential streets without damaging the trees.

With the rest of the eastern area, the snowfall that blanketed the Tarrytowns last February established a 16-year record. Nevertheless, plows and equipment were on the job promptly, and in less than six hours every street in the two communities was open to traffic. Within five days, the snow was completely removed from the main business districts and most of the residential streets.

Both communities use the same loaders for handling sand, gravel, and other materials during the summer months.

Clearing streets in North Tarrytown with a FWD truck pushing a Baker plow.

What Should We, As Cities, Do?

A plea for more effective cooperation among cities, under the leadership of the reorganized American Municipal Association *

By FLETCHER BOWRON
Mayor of Los Angeles, Calif.
New President, American Municipal Association

A determination of what we, as cities, should do, requires a frank self-appraisal. What have we been doing, and what have we failed to do? Our most pronounced failure has been in the lack of effective organized cooperation. The cities of America, with a few exceptions, no longer indulge in foolish rivalries and sectional jealousies, but they have not worked together in a planned or organized way on a national scale in a manner to produce sufficient tangible beneficial results to meet the very apparent needs. It is a sad commentary on our lack of practical and efficient cooperation, that we have no national municipal program. Individual cities may be doing something worth while—many of them are—but they are working largely without reference to what other cities are doing, and many of them are going in different directions.

Many Reasons for Lack of National Program

There are many reasons for this situation, including the frequent turnover of elected city officials, leaving little opportunity for many, if not most, of those responsible for the conduct of the affairs of cities to come to a full realization of the great value of cooperative long-range municipal planning and concerted action. New officials, not having the contacts and knowing little of what has been done previously on a national scale, do not wholeheartedly carry on the work of those who have gone before, and most city officials have little time to familiarize themselves with matters of this sort, being overburdened with time-consuming problems of purely local character. They do not realize that those burdens could be materially lightened if the cities only had a better-working, more effective national organization to attack the more serious of the problems common to the many cities of the entire country. What should be done, therefore, is to tie the cities, as such, rather than individual city officials, into the national organizational effort that will keep going and increase in usefulness to the general purposes of municipal government year after year.

What should we, as cities, do? We should be developing a program directed to fundamental municipal problems, and such a program must be a national one, to be effective and productive of the most good. It should be adapted within each state. We should have a formula so thoroughly worked out by pooling our resources in the matter of securing the most competent experts and wisest counsel, that there may be developed a working plan that practically every city could and would follow.

With so much to be done, trying desperately to catch up because so little was done over a period of 15 years marked by depression, war, and inflation, and now faced with high salaries, high prices, high cost of construction, and limited income, it is essential that every single dollar be spent where it will do the most good. There can be no room for waste, for inefficiency, for bad management. We need more standardized policies and practices relating to many things in connection with the administration of city government.

We need more uniformity in such matters as the fixing of salaries. Those who conduct the affairs of the cities should know more about proper job analysis and salary standardization, in order to give employes the assurance that they will get equal pay for equal amount and quality of work, with no favoritism. There should be uniformity relating to vacations of employes with pay, sick leave, layoff, and general conditions of employment. We should develop personnel policies and programs based on sound principles so that the cities may attract and hold in municipal service competent employes willing and able to do an effective job.

Morale, Personnel, Training

We must concern ourselves with the development of that intangible matter of morale among the employes of our city. This, of course, depends on so many things that no general formula may be laid down, but in this regard, there should be more interchange of experiences, ideas, and suggestions. Cities should get the maximum of work and loyalty from their employes.

There is another personnel problem which deserves special consideration, having to do with cities of medium or small size, more than larger cities. How are cities with limited financial resources going to be able to demand the specialized and professional services of men of first-grade ability, when they cannot afford to employ them on a full-time basis, and when, as a matter of fact, in many, or most, instances the magnitude of the job does not require full-time service? Merely because a city is small does not mean that it should not require and acquire the same level of

It is possible for the American Municipal Association and other affiliated organizations, working together, to make a great contribution to government in America, to the welfare of American people, to the cause of democracy. If we could, and I am sure we can, reach a common understanding of what it is that we must do about fundamental problems, if we can only evolve a national municipal program, if we could formulate and agree upon a national municipal policy or policies then our effectiveness would be immeasurably augmented, and what is done for municipal government thereafter would be a matter of good organization carried on by those most competent.

Behind this kind of approach we could, and undoubtedly would, rally other powerful organizations and bring about the most necessary thing in democratic government in America, an enlightened public opinion, as related to local city problems, and generally to municipal government. Depending on our cooperative organizational effectiveness, we could have a majority of the American people accept the municipal viewpoint, because we could then have one. We could appeal to the people, the citizenship of America, if we first knew where we were going — and they knew we knew.

* Excerpts from an address delivered at the 24th Annual Conference of the American Municipal Association at New Orleans, November 6, 1947.

ability for the conduct of its operations as a large city. This is not impossible of solution. Cities, particularly those in adjoining areas, should in some manner get together and jointly employ the full-time services of well-qualified men and allocate their time among the participating cities on the basis of need, distributing the cost in such a way as to produce one adequate full-time salary.

Many, if not most, of the cities are deficient in the matter of administration of general city government. The greatest failures of government in America are failures of administration. This calls for an adequate training program, and that can best be brought about by cities working together in its development. We should place more emphasis on in-service training. While many individual cities are undertaking such programs, it is obvious that the training could be more effective if developed by a number of cities working together, and thus making sure of the best accredited training methods and practices and competent instructors.

Home Rule

Where it exists, the rights incident to the principle of home rule should be fully taken advantage of, and where home rule does not exist, there should be a united effort to secure it. Only 16 states provide constitutional home rule. On at least one occasion, the American Municipal Association has adopted a strong resolution relating to the principle of municipal home rule and proposed to add to its program of activity an effort to lay the foundation of a revival of interest in this matter on a national basis. Nothing has come of it and no really important forward steps have been taken in the direction of broadening the powers of municipal government, of expanding its independent status, for many years. In those states where there is no such thing as home rule, great cities are absolutely dependent upon their state legislature for special grants of power. Because of the fact that some cities may act independently and others must be dependent upon legislative enactment, making it impossible to have a long-range municipal program because it cannot be determined from session to session what extensions or limitations of municipal powers may result from legislative acts, it is extremely difficult for the cities of the country on a national basis to work in the same manner towards the solution of many of their most difficult mutual problems.

I can conceive of no more important single initial program for a revitalized American Municipal Association to undertake than to do something constructive and effective in the field of the extension of municipal home rule. The cities of the country should have the legal authority they require to handle their own problems.

> As officials of cities large and small, we may, and most of us do, take pride in the accomplishments and plans of our respective cities, but collectively we don't know where we're going, and we don't know what it is we want to do. Nationally, in most of the states and for practical purposes in many of our individual cities, we attack our municipal problems piecemeal, as though each of them was separate from all the rest, rather than being inextricably woven together.

Planning for Common Problems

Every city in America should be concerning itself with long-range planning, and in this regard we at once get into a very broad field. There is physical planning, economic planning, social planning, financial planning. More and more we realize that we should not be content to handle municipal affairs on an expedient basis or merely from year to year. A master plan for each city, for every community, whatever the size, should be in the process of development. It is in this connection that we begin to get some sense of the interdependence of things relating to municipal government and the resulting benefits to be derived by the people living together in a well-administered community, large or small. We must realize that it is absurd to talk about a street plan or residential restrictions or zoning independently of the possibilities of urban redevelopment. We must realize that public and private plans for economic expansion exercise a controlling influence on our water requirements, sewage disposal and many other things that must be supplied when people live close together in large numbers. We must realize that traffic regulation and control, off-street parking, and mass transportation must be considered and planned together. It is impossible to make reference to numerous problems confronting the cities of America without at once appreciating their relationship one to another and the necessity of planning far in advance of action and then working towards a definite objective.

Through effective cooperation, by employing the means of a well-staffed and competently run national organization, and with various municipal organizations, in addition to the American Municipal Association, which are national in scope, working together rather than independently and frequently at cross purposes, every city could receive the benefit of the highest level of intelligent, expert thinking and skill which no city acting alone as a practical matter can command.

All of this leads to the inevitable conclusion that the American Municipal Association, now operating under its amended charter and serving as a federation, so that all municipal organizations or any organizations with similar objectives and purposes and national in scope may be tied together so they may work together for the mutual benefit of American cities and the general welfare of city dwellers, has a great opportunity to make an outstanding contribution to good government in America and to better serve the American people. In this regard the newly organized Municipal Administration Service * presents a means, a vehicle, for accomplishing much of the program I have outlined relating to what we, as cities, should be doing now, in the immediate future and in succeeding years. This Service has great possibilities. If it can be adequately financed, properly staffed, it will supply a long-felt need of all American cities.

* See p. 111 of this issue for further reference to the new Municipal Administration Service. THE AMERICAN CITY for January will contain an article by Roy H. Owsley, describing other features of the new organizational program of the American Municipal Association.

British Film on Planning Available for U. S. Showing

A FEATURE documentary film about the plan for the reconstruction of Plymouth, England, *The Way We Live*, is available in this country. Sixteen-millimeter prints may be rented for $5 from regional offices of the British Information Services. Produced by the J. Arthur Rank Organization, Inc., the film consists of 8 reels and has a running time of 64 minutes.

City officials and planners in the United States will be interested and entertained by the film's account of how the plan for Plymouth's rebuilding was conceived, whether or not they agree with the methods that were used. One of the film's important contributions is its insight into people's reactions to a plan, and the obstacles that a bold plan faces.

It shows lectures, political meetings, debates in the City Council, arguments between people in all walks of life, and a march of 3,000 young people with banners demanding that the plan be carried out.

Further information about the film may be obtained from the British Information Services, 30 Rockefeller Plaza, New York 20, N. Y.

The Will Rogers Memorial Auditorium and Coliseum. Below: Life-size statue of Will Rogers, by Electra Waggoner Biggs.

Fort Worth Unveils Will Rogers Statue

THE picture at the top of the page was taken on November 4, during the unveiling ceremonies at Fort Worth, Texas, of a life-size bronze statue of Will Rogers in front of the massive coliseum and auditorium which bear his name.

General Dwight D. Eisenhower delivered the address in honor of the humorist-philosopher, paying tribute to his discernment, humaneness, and homely phraseology, and declaring that Rogers' advice to the United States about settling post-war problems, if he were alive today, would be to "get at it and do it."

"The problems of peace are no more difficult than those of war if we jump on them in the same way," the Army Chief of Staff declared. "What wisecrack would he (Rogers) have shot at us on a dozen differences in the United Nations; what kind of needling would he have used to awaken us to the relationship between maintenance of our liberties and a decent life for others who desire also to remain free? What quip would he have employed to shame us into greater saving of food for the needy; what shaft would he have launched to inspire us to greater cooperation at home?"

Mayor F. E. Deen accepted the 3,200-pound statue of Rogers on behalf of the people of the city, thanking the donor, Amon Carter of Fort Worth, who had commissioned the statue and a painting of Rogers displayed at the main entrance of the coliseum and auditorium.

Wild-Life Sanctuary Established by Stone Harbor

THE Borough of Stone Harbor, in Cape May County, N. J., has taken an important forward step in the enactment on October 11 of an ordinance which will preserve as a public park, for use as a wild-life sanctuary, an exceptionally beautiful tract of seashore land within the borough limits.

In the opinion of Dr. Horace E. Wood, II, Professor of Biology at Rutgers University and Research Associate of the American Museum of Natural History, it is difficult to exaggerate the scientific value of this area; centuries-old fixed sand dunes, copped by the best (and now, almost the last) barrier island forest association still left along the Jersey coast, and occupied by a rookery of not less than 500 herons of four species (including the American egret) which nest there. There is a holly tree at least 200 years old and dwarf cedars more than 170 years of age.

Acquisition of the site was facilitated by the fact that the borough held title to the whole area through tax foreclosure. When the proposal was originally presented to the Mayor and the Council in August, several other scientists appeared in support of the measure, including Dr. Thurlow C. Nelson, Professor of Zoology at Rutgers University and chairman of the Division of Water Policy and Supply of the New Jersey State Department of Conservation; Thomas F. Shea, secretary of the Witmer Stone Club; Howard Cleaves, well-known wild-life photographer and lecturer, and others.

San Francisco's Asphaltic Concrete Streets

Left inset: This is the way the San Francisco street looked during grading operations. Center: A view of the finished pavement. Right inset: Assistant City Engineer C. V. Patterson demonstrates the open texture of the finished pavement.

YOU can be born in San Francisco, explains City Engineer Ralph G. Wadsworth, you can live here and die here, but you no longer can be buried here. The last of the San Francisco cemeteries has been transformed into a new residential district and the graves transferred to cemeteries elsewhere. This has resulted in a residential street paving improvement of 12,000 lineal feet in Laurel Heights, one of the new residential areas, and 10,000 feet in Anzavista, the other.

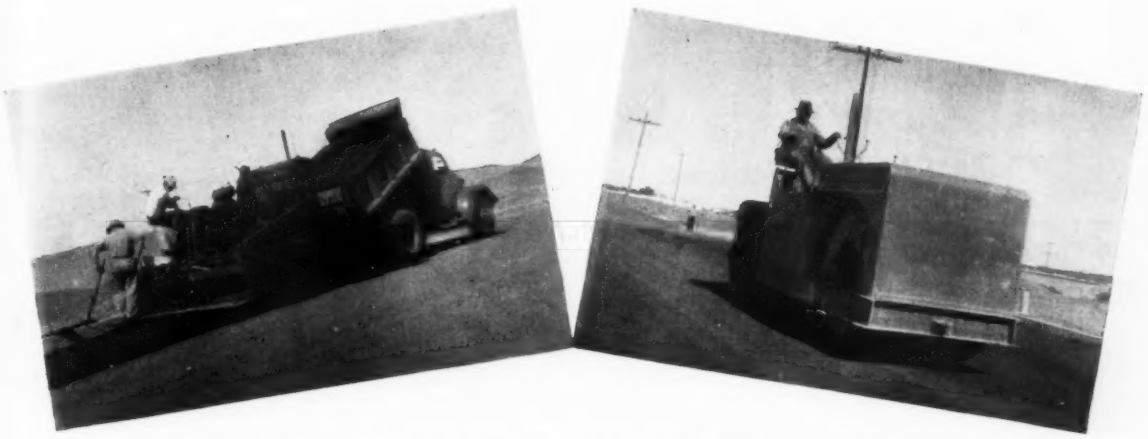
The development, located high in San Francisco's hills not far from the picturesque Twin Peaks, benefits from a beautiful location and is bound to be popular. The street construction at these places is being meticulously designed and built to give both long life and an attractive appearance. The special conditions in this area made it very simple to employ certain distinctive types of construction that are peculiar to San Francisco.

Subgrade No Problem

For example, no one is troubled in this area with a mucky subgrade. The hills are all sand, underlaid by relatively soft red rock. Yet the shifting sands make it desirable to have a sound solid base, particularly for a residential pavement. San Francisco specifies a macadam sub-base with an asphaltic concrete base and an asphaltic concrete wearing surface in this area. For the sub-base the soft rock found within the subdivision gives an excellent account of itself. It is easily excavated and produces enough fines without any additional blending to produce a dense mix. The rock is free from all organic matter, loam, or clay and is able to pass a screen having a 2½-inch mesh. To meet San Francisco's specifications, it must further be graded so that not more than 15% will pass a ¼-inch screen, and the material between the ¼-inch and the 2½-inch is blended uniformly from fine to coarse. However, ordinary crushing operations meet this handling.

In areas where the rock has not been uncovered, rock excavated elsewhere is spread to the sandy subgrade in a uniform layer to produce a finished 6-inch macadam sub-base. It is rolled with solid-tired rollers weighing 350 pounds per lineal inch of roller. San Francisco does not make a density specification, but does insist that the rolling shall continue until the rock does not creep or move in front of the roller. If there are insufficient fines in the base to produce this stable condition, the specifications call for the addition of more fine

New residential developments in San Francisco call for high-grade paving



Left: A Barber-Greene paver lays a 2-inch layer of asphaltic concrete base on one of San Francisco's streets. Right: The base is carefully rolled by a 10-ton roller prior to applying the asphaltic concrete to the street.

materials until this result has been reached.

Base Specifications

On the macadam sub-base is applied a four-inch asphaltic concrete base. This base contains 3½% to 5½ by weights of 80-penetration asphalt. The mineral aggregate is mixed to the following proportions:

Sieve	*% Retained*	
Size	*min.*	*max.*
1½"	..	..
¾"	25	35
¼"	20	30
#10	5	15
#40	5	15
#80	5	15
#200	5	15
Passing #200	0	5

The base is spread in two layers by a Barber-Greene paver and rolled to its finished thickness.

This asphaltic concrete base supports a two-inch wearing surface, of which there are two specifications that the contractor can use. In these, the asphaltic cement varies from a low of 3½% to a high of 7%. The contractor used principally the type which called for a mix according to the following analysis:

Sieve	*% Retained*	
Size	*min.*	*max.*
1¼"	..	..
¾"	16	20
¼"	13	15
#10	8	10
#200	44	48
Passing #200	5	8

With this mix must be supplied an asphaltic cement content of 6% to 7%. The mix further specifies that the mineral aggregate between the ¾ and the #10 screens be not less than 37% and not more than 45% total.

This mix is delivered to the grade at a temperature ranging between 275° and 325° F. It is spread by Barber-Greene pavers and rolled until it attains a density equal to 92% of the specific gravity of the combined aggregates. The finished pavement is required to have a smoothness such that when a straight edge 10 feet long is laid on the surface parallel to the centerline of the pavement, the surface shall in no place vary from the lower edge of the straight edge more than one-eighth of an inch.

All the pavement in this new addition carries a concrete curb 14 inches deep, extending 6 inches above the gutter line. The top is 6 inches wide. The front face has a 1½-inch batter in 6 inches and the back face is vertical.

The pavements in the developments measure 34 feet wide in the interior residential areas, 40 feet wide for major streets, and 60 feet wide for main arteries. The normal width between property lines in surrounding areas is 68.75 feet. Consequently when the subdivider was required to dedicate a greater width, the city paid for the added width of grading and paving that this entailed.

The work is under the direction of City Engineer Ralph G. Wadsworth. H. C. Vensano is Director of Public Works.

Sales Tax Spreads in California

LOCAL sales taxes have been adopted by 72 California cities in 18 months and have been generally accepted by the taxpayers, says Walter C. Peterson, Los Angeles City Clerk.

Speaking at a panel discussion during the annual conference of the American Municipal Association on November 4, Mr. Peterson said, "It is significant that even though the adoption of sales and use taxes by California cities constituted a radical change in revenue legislation, they have been met with a general spirit of acceptance and cooperation on the part of business firms and the taxpaying public. Even though the elected officials who assumed responsibility for the enactment of these revenues into the law expected many complaints and objections following their adoption, the objections and complaints have been practically nil."

The success of California cities with sales and use taxes, according to Peterson, can be attributed largely to comprehensive advance planning, effective administration, and wide publicity regarding the cities' actual need for new revenue and methods of administering the new tax.

The speaker said that the tax provides a stable source of revenue together with diversification of sources. "The daylight citizen from adjoining communities as well as the visiting fireman pays a part of the cost of government, relieving the local property-owner of added burden," he added.

It Doesn't Have To Smell

By ROLF ELIASSEN
Professor of Sanitary Engineering
College of Engineering
New York University

REFUSE disposal sites in many municipalities are malodorous waste lands, sources of many complaints, and vexing problems to municipal officials. In other communities, refuse disposal is handled in such a manner that no odors or complaints arise, and constructive objectives in the reclaiming of waste land are accomplished without nuisance. The combination of engineering planning, competent supervision, modern equipment, and judicious use of chemicals should make the problem of odor control fairly simple; its solution should attract favorable comments from the citizens of a community.

Sources of Odors

Many simply take it for granted that the refuse disposal site of a municipality will be, of necessity, the source of odors. This defeatist attitude should not be accepted. The municipal engineer, by the application of scientific principles and common sense, must seek to eradicate any such sources. Let us, therefore, look at the factors involved.

Much organic matter in garbage naturally yields an offensive odor. Furthermore, these odors become intensified by slight decomposition of the garbage in which the more complex organic matter breaks down into simpler and more volatile compounds. We should not confuse these odors with the gases of decomposition. These are principally methane, carbon dioxide, and other non-odorous substances.[1] Nor should we attribute them all to hydrogen sulfide, although some may be emitted during decomposition. But the prevailing odor from refuse disposal sites is simply that emanating from putrescible organic matter which is smelly in nature.

We must realize that if the odors were composed entirely of gases released by decomposition of the organic matter within the body of the fill, there would be no method of odor control outside of disinfection of the entire mass in order to stop all bacteriological action. We can of course do this, but it is not economically sound. However, it is possible to control odorous vapors arising from the exposure of organic matter, particularly garbage in a partially decomposed state, either by covering or by spraying the exposed material with some sort of oxidizing agent that destroys the surface organic matter.

Let us look at the covering operation first. Sanitary landfills constitute our most important example. These fills, when properly operated, should give no appreciable rise to odors since the finished fill is covered on top and sides with approximately 24 inches of earth. Consequently, no refuse is exposed; the only vapors released to the atmosphere are those contained in the gases of decomposition which have been shown to be non-odorous. A recent survey by an editor of this magazine[2] has indicated that there are approximately one hundred municipalities in the United States using this method of refuse disposal. The survey indicated that most of the cities were well pleased with the results being obtained.

Dumps are one of the greatest sources of odors. Contrast sanitary fills with the odorous common dump when no attempt is made to cover the refuse. Nothing more need be said concerning the odors at these dumps, because conditions are obvious from observation in any part of the country.

Contrast the land fills also to the even more offensive "burning dump." These generally do nothing more than burn the paper and wood, and thus warm the wet garbage, driving off the odorous

1. "Decomposition of Landfills." *American Journal of Public Health*, Vol. 32, p. 1029; 1942; Eliassen, R.

2. "Summarizing the Sanitary Fill." *The American City*, Vol. 62, p. 92; April 1947; Foster, W. S.

volatile compounds. The destruction of refuse by burning is an excellent sanitary practice *only* if performed in a well-designed incinerator.

Incidentally, incinerator ashes are not always free from odors. If an incinerator has been improperly designed, or if it is being operated at a tonnage far above its normal design capacity, all of the garbage may not be properly dried and burned. The solution lies either in the operation of the incinerator within its designed capacity or the rehabilitation of the incinerator to handle the loading placed upon it. Residue from a well-designed, well-operated incinerator should not smell.

Control of Odors

From this we can see that good housekeeping at the refuse disposal site is the primary method for odor control. This implies covering each day's refuse with a minimum of 6 inches of earth in order that no organic matter may remain exposed to the atmosphere. All finished fills should have a minimum of 24 inches of cover, not only to control odors, but also to control flies and rodents, which are so common at open dumps. Another feature of the properly designed sanitary fill is that the schedule of dumping operations is such that a strip of from 10 to 100 feet in width is filled over the entire length and width of the fill before the next adjacent strip is started.[4] By this method, trucks may finish dumping on one strip and need not return to that strip after the final cover totaling 24 inches has been placed.

One precaution must be taken in the maintenance of sanitary landfills. That final cover must remain sealed. Within a period of a few months to one year we can expect a settlement of approximately 25 to 40% of the original height, the amount depending upon the nature of the materials and the degree of compaction originally given.[3] Settlement is frequently uneven in places and at times produces crevices that extend through the top cover and down into the refuse itself. Therefore, this calls for a routine observation of the condition and maintenance of the earth cover intact at all times.

Now, let us turn to the oxidizing spray for odor-control work. It is important to realize that if a sanitary landfill or other type of refuse disposal site is covered, care should be taken that the cover material is not excavated so that the refuse underlying it is exposed at some later time.

However, in certain instances we find conditions arising that require excavation into the sanitary fill despite our most careful planning. Consequently, the excavation must be prepared to utilize some means of odor control as soon as the refuse is exposed or else the most foul odors will permeate the air, and complaints will arise from irate citizens at a considerable distance from the disposal site. This situation has arisen to embarrass city officials a number of times.

Let us see what can be done about it. Buswell has stated that the odorous substances in wastes are in general reduced organic compounds which may readily be oxidized.[6] Therefore, it is desirable that an active oxidizing agent be sprayed over all of the exposed refuse in order to destroy these compounds, and thus eliminate the sources of the odors.

The author carried out a number of experiments[6] in an attempt to control odors arising from exposed refuse in excavations for utilities conduits and drainage pipes at an emergency housing project constructed on approximately 100 acres of sanitary landfill. The odors which emanated from this site were of such a nature that complaints were registered by the hundreds, and laborers were not willing to work in the trenches. Masking compounds, such as phenol derivatives and pine oil compounds, were not successful. In the open atmosphere the odors disappeared rapidly. Disinfectants gave little relief and were the wrong approach anyway. The purpose of spraying is not to destroy bacteria on the surface of the garbage, but to destroy the surface organic substances, which of themselves give off bad odors.

Chlorine, an extremely active oxidizing agent, was tried in the form of powdered chloride of lime. However, it was so difficult to distribute the powder evenly and to make it adhere to the vertical walls of the trenches that the method was dropped. Spraying of a solution seemed to be the logical alternative. And this made the use of chlorine even more difficult. Practical considerations made it mandatory that the solution be sprayed with the ordinary type of agricultural sprayer that is readily available. And the highly corrosive chlorine solution would destroy one of these in short order.

Fortunately, the experiences of New York City's Department of Sanitation gave a clue. Its engineers had obtained excellent results previously in the removal of odors from the streets adjacent to the Fulton Fish Market by spraying the pavements with a noncorrosive solution containing an oxidizing substance known as OD-30. Some of this was obtained from the O. D. Chemical Corporation of New York and was tried in an agricultural-type sprayer.

This chemical proved excellent.[7] The OD-30 was made up in a ½ to 1% solution and applied at a rate of from 20 to 100 pounds per acre, the dosage depending on the ratio of ashes to garbage in the exposed refuse. One spraying was usually sufficient, if the surfaces of the refuse were completely wetted by the spray. However, if rain followed in

3. "Load-Bearing Characteristics of Landfills." *Engineering News-Record*, Vol. 129, p. 369; 1942; Eliassen, R.

4. "Sanitary Landfills in New York City." *Civil Engineering*, Vol. 12, p. 483; 1942; Eliassen, R.

5. "Taste and Odor Control in Water Purification." *Bulletin* of Industrial Chemical Sales Division, W. Va. Pulp and Paper Co., p. 13; 1947; Buswell, A. M.

6. "Housing Construction on Refuse Landfills." *Engineering News-Record*, Vol. 138, p. 756; 1947; Eliassen, R.

7. *Vide*[6].

Spraying with a strong oxidizing agent controls odors from exposed areas.

a day or two, we had to call out the spraying crew again to oxidize the organic material exposed since the old oxidized matter was washed away by the rain.

By returning to the site of the spraying about an hour after completing the operation, two men on the spraying truck could tell whether more material was needed or whether they had done a good job. As they gained experience through looking at the amount of garbage and ashes in the fill, they could gage their operations carefully. The reactions of the workers in the trenches and other excavated areas were excellent; whereas, previously, they had been forced out of the trenches by the foul odors, now they willingly returned after the spraying crew had completed their task. Furthermore, complaints from citizens of the surrounding areas stopped as the spray did its work.

The successful use of the spray here pointed the way to many other uses. It can be used to prevent odors in the event of an equipment breakdown in sanitary fill operations and the cover cannot be supplied temporarily. It can be used for cleaning garbage and refuse trucks after they have finished their day's work. At a convenient point on the refuse disposal site a pump and sprayer could be located to spray this solution over the body of the truck whenever it may have been exposed to garbage. It could be used in incinerator operation in the event that the plant finds it necessary to store a bin full of garbage overnight. And it could be used generally to wash down walls of the incinerator building, the bucket, and other refuse handling equipment to keep odors from accumulating.

Summary

This article has discussed several ways of eliminating that smell which some people think must accompany refuse operations. Briefly they may be summarized as follows:

(1) Don't tolerate an open dump. It is a municipal disgrace.

(2) Don't allow the "burning dump." It is always a dangerous fire hazard and only aggravates a nasty odor problem.

(3) When using the sanitary fill, keep the refuse covered promptly and see that the cover remains sealed.

(4) When incinerating, be sure to do a thorough job of destroying the organic material.

(5) Avoid, if possible, excavating in a sanitary fill.

(6) When exposure of garbage is unavoidable, spray all exposed surfaces with a powerful oxidizing agent.

(7) Keep odors down in garbage trucks and other places by an oxidizing spray.

Taxation for Prosperity and Public Works Timing

STABILIZATION of federal tax rates, on a basis which would balance the budget and provide a surplus for debt reduction at a high level of employment and national income, is recommended by the Research and Policy Committee of the Committee for Economic Development. In a statement entitled "Taxes and the Budget: A Program for Prosperity in a Free Economy," released November 13, the Committee recommends that tax rates be set sufficiently high to yield a surplus of about $3 billion when about 96% of the labor force is employed and prices are at a level consistent with high employment.

On the basis of the present outlook for governmental receipts and expenditures in the fiscal year beginning January 1, 1948, taxes could be reduced as much as $6 billion in the opinion of the Committee. The CED warns, however, that before making final decisions in regard to tax reduction in the near future, we should have a clearer picture than we now have as to probable expenditures in the fiscal year 1948, and should have evidence that inflationary pressures have begun to diminish.

Subsequent changes, recommended for the 1950's, carry further the effort to design a tax system which will correct present adverse effects on risk-taking and productive effort, reduce the excessive tax burden on the lower-income groups, and eliminate gross inequities. All excise taxes, other than those on alcoholic beverages, tobacco, and gasoline, would be removed. A reduction in the corporate tax rate from 38% to 30% would be made, and a second step taken toward the elimination of double taxation of dividends.

CED proposals eventually would cut revenue from excises by nearly 50 per cent, or $4 billion. Elimination of excises on transportation and communication is recommended as a "first step" out because they enter into the prices of all goods, and the tax is therefore a heavy and disproportionate levy on low-income families. The report points out that the lowest income group can share in tax relief only through removal of excises, since they do not now pay income tax.

Discussing the timing of public construction the report says, in part:

> It is probably now generally agreed that what can be done toward stabilizing the economy by varying the timing of public construction and conservation expenditures is fairly small, in relation to the total problem. But once its limitations are recognized, the programming of public works and conservation projects can make a valuable contribution. Both money and resources will be economized on if the government or any other public or private body with stable prospects concentrates its building in periods when total construction activity is low. At the same time, this will make for the stability of the construction industry and indirectly of the whole economy.
>
> Success in such a program will depend upon the quality of advance preparations. As far as possible, financial, engineering, and administrative arrangements should be completed on a reserve of diverse projects to be started quickly when necessary. The scope of useful action will be expanded by coordination of federal plans with those of state and local governments.

Copies of the full statement are available on application to the Committee for Economic Development, 285 Madison Avenue, New York 17, N. Y.

Municipal Building for St. Petersburg, Alaska

St. Petersburg, Alaska, has received an advance of funds from the Federal Works Agency to prepare plans and specifications for this combination municipal building and public library. Estimated cost of the building is $90,000. Architects are H. B. Foss and MacKay Malcolm.

Equality Sought In Civil Rights

The President's Committee on Civil Rights submits a notable report. Federal, state, and local cooperaton is urged

IN THE TIME that it takes to read this report," says the President's Committee on Civil Rights,* in its report submitted on October 29, "a thousand Americans will be born. These new Americans will come into families whose religious faiths are a roster of all those which men hold sacred. Their names will be strange and varied, echoes from every corner of the world. Their skins will range in color from black to white. A few will be born to riches, more to average comfort, and too many to poverty. All of them will be Americans.

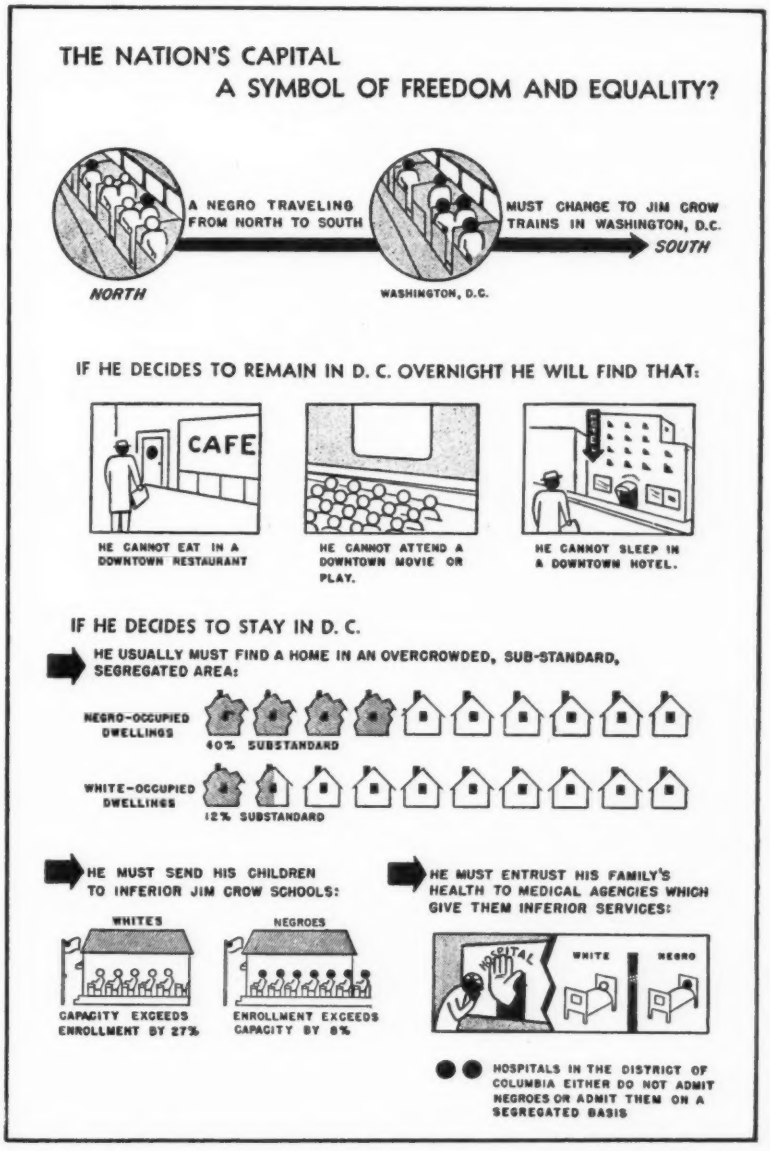
"These new Americans, drawn from all of the races of mankind, provide a challenge to our American democracy. We have a great heritage of freedom and equality for all men, sometimes called 'the American way.' Yet we cannot avoid the knowledge that the American ideal still awaits complete realization."

To rally the American people to the support of a continuing program, the President's Committee recommends a long-term campaign of public education to inform the people of the civil rights to which they are entitled and which they owe to one another.

"It is not enough," says the report, "that full and equal membership in society entitles the individual to an equal voice in the control of his government; it must also give him the right to enjoy the benefits of society and to contribute to its progress. The opportunity of each individual to obtain useful employment, and to have access to services in the fields of education, housing, health, recreation, and transportation, whether available free or at a price must be provided with complete disregard for race, color, creed, and national origin. Without this equality of opportunity the individual is deprived of the chance to develop his potentialities and to share the fruits of society. The group also suffers through the loss of the contributions which might have been made by persons excluded from the main channels of social and economic activity. . . .

"The Committee believes that the greatest hope for the future is the increasing awareness by more and more Americans of the gulf between our civil rights principles and our practices. Only a free people can continually question and appraise the adequacy of its institutions."

The Committee's report offers many


THE NATION'S CAPITAL
A SYMBOL OF FREEDOM AND EQUALITY?
A NEGRO TRAVELING FROM NORTH TO SOUTH
MUST CHANGE TO JIM CROW TRAINS IN WASHINGTON, D.C.
SOUTH
NORTH
WASHINGTON, D.C.
IF HE DECIDES TO REMAIN IN D. C. OVERNIGHT HE WILL FIND THAT:
CAFE
HE CANNOT EAT IN A DOWNTOWN RESTAURANT
HE CANNOT ATTEND A DOWNTOWN MOVIE OR PLAY.
HE CANNOT SLEEP IN A DOWNTOWN HOTEL.
IF HE DECIDES TO STAY IN D. C.
HE USUALLY MUST FIND A HOME IN AN OVERCROWDED, SUB-STANDARD, SEGREGATED AREA:
NEGRO-OCCUPIED DWELLINGS
40% SUBSTANDARD
WHITE-OCCUPIED DWELLINGS
12% SUBSTANDARD
HE MUST SEND HIS CHILDREN TO INFERIOR JIM CROW SCHOOLS:
WHITES
NEGROES
CAPACITY EXCEEDS ENROLLMENT BY 27%
ENROLLMENT EXCEEDS CAPACITY BY 8%
HE MUST ENTRUST HIS FAMILY'S HEALTH TO MEDICAL AGENCIES WHICH GIVE THEM INFERIOR SERVICES:
HOSPITAL
WHITE
NEGRO
HOSPITALS IN THE DISTRICT OF COLUMBIA EITHER DO NOT ADMIT NEGROES OR ADMIT THEM ON A SEGREGATED BASIS

One of the charts which help to dramatize the report of the President's Committee on Civil Rights.

* This Committee, created by Executive Order on December 5, 1946, is composed of Charles E. Wilson (chairman), Sadie T. Alexander, James B. Carey, John S. Dickey, Morris L. Ernst, Rabbi Roland B. Gittelsohn, Frank P. Graham, Bishop Francis J. Haas, Charles Luckman, Francis P. Matthews, Franklin D. Roosevelt, Jr., Bishop Henry K. Sherrill, Boris Shishkin, Dorothy Tilly, and Channing W. Tobias.

The report is available at $1.00 from the Government Printing Office, North Capitol and H Streets NW., Washington, D. C., and has also been published at the same price by Simon & Schuster, New York, N. Y.

suggestions for definite action. Among these suggestions are:

- The establishment of a permanent Commission on Civil Rights in the Executive Office of the President, preferably by Act of Congress; and the simultaneous creation of a Joint Standing Committee on Civil Rights in Congress.
- The establishment by the states of permanent commissions on civil rights to parallel the work of the federal commission at the same level.
- The enactment by Congress of a new statute specifically directed against police brutality and related crimes.
- The enactment by Congress of an anti-lynching act.
- Action by the states or Congress to end poll taxes as a voting prerequisite.
- The enactment by Congress of legislation establishing local self-government for the District of Columbia, and the amendment of the Constitution to extend suffrage in presidential elections and representation in Congress to District residents.
- The enactment by Congress and the state legislature of legislation requiring all groups which attempt to influence public opinion to disclose pertinent facts about themselves through systematic registration procedures.
- The elimination from American life of segregation based on race, color, creed, or national origin.
- The conditioning by Congress of all federal grant-in-aid and other forms of federal assistance to public or private agencies for any purpose on the absence of discrimination and segregation based on race, color, creed, or national origin.
- The enactment of a federal Fair Employment Practice Act prohibiting, in private employment, all forms of discrimination based on race, color, creed, or national origin.

State and Local Action

- Enactment by the state legislature of fair educational practice laws for public and private educational institutions, prohibiting discrimination in the admission and treatment of students based on race, color, creed, or national origin.
- The enactment by the states of laws outlawing restrictive covenants.
- The enactment by the states of fair health practice statutes forbidding discrimination and segregation based on race, color, or national origin, in the operating of all public or private health facilities.
- The enactment by Congress of a law stating that discrimination and segregation based on race, color, creed, or national origin, in the rendering of all public services by the national government, is contrary to public policy; and the enactment by the states of similar laws.
- The enactment by the states of laws guaranteeing equal access to places of public accommodation, broadly defined, for persons of all races, colors, creeds, and national origins.

This voluminous report of the President's Committee on Civil Rights concludes by pointing out that an effective and continuing campaign to strengthen civil rights will require the cooperation of the federal, state, and local governments and of private agencies. "We believe," says the Committee, "that the permanent Commission on Civil Rights should take the leadership in serving as the coordinating body."

Garbage-Sewage Survey

(Continued from Page 83)

garbage. This gas could be utilized fully in developing power to operate the sewage treatment plant.

To evaluate properly the effect of garbage disposal with sewage treatment, the engineers fitted it to the two proposals that seemed to have the most merit. With respect to the plan involving an increase in the size of the present Imhoff tank, the only added factors are an increase in the cost of sludge pumping, an increase in sludge digestion tank costs, and a small increase in the cost of yard piping. The total cost of the treatment-plant portion of the plan is estimated at $1,926,000.

The cost of the grinding station, with ample capacity to handle the estimated 20,000 tons in 1960, would run to $153,000, including all equipment. This station would have two grinding units with a capacity of 10 tons per hour each, conveyor equipment, can-washing equipment, and a steam room to thaw out frozen cans, as well as the necessary walks, drives, and landscaping. The total estimated cost of Imhoff tank and grinding station, then, would run to $2,079,000.

In comparison, the activated sludge plant at Bauhof Park, modified to include garbage grinding, would involve an increase in the cost of the primary settling tanks (in order to provide more grease removal equipment); an increase in the cost of sludge-pumping facilities, an increase in the cost of the sludge digestion tanks, and a small increase in the cost of yard piping. The total estimated cost of the sewage treatment portion, plus the garbage-grinding addition, runs to $1,892,000, or $187,000 less than the plan mentioned.

To make the comparison clear, one must match annual costs of the two plants. In the case of the plan involving the garbage-grinding plant located adjacent to the proposed treatment plant, it is assumed that sufficient power will be generated from the use of the sewage gas that it will not be necessary to purchase power for the operation of either the treatment plant or the garbage-grinding plant. In fact, it is expected that there will be more gas available than can be utilized in the generation of power for the plants. If the grinding plant in Bauhof Park discharges its ground garbage into the outfall sewer for transmission to the present Imhoff tank plant, power will have to be purchased for the grinding equipment. This is estimated at $4,000 a year.

The total estimated annual cost for grinding the garbage and sending it to the Imhoff tank by way of the sewer amounts to $299,000. This figure contrasts with the $297,000 for the grinding plant built as a part of the activated sludge plant, or a savings of $2,000.

Savings by Garbage Grinding

To measure the economy of the grinding operation with present garbage disposal practices, one should match costs. The estimated annual cost of sewage treatment under the activated-sludge-plus-grinding plan has been shown to be $173,000 per year. Adding to this the 1960 cost of hog feeding at $135,000, one gets a total of $308,000 per year. This figure is directly comparable with the total annual cost of sewage treatment and garbage grinding under the same plan—$297,000. The cost of garbage grinding is $11,000 less than the sewage treatment cost plus hog feeding.

While aesthetically, the garbage-grinding operation offers distinct advantages, the actual savings that the garbage-grinding operation makes possible, the engineers feel, justifies the change.

House to Rent for Negro Occupancy

TEN ROOM HOUSE, at least sixty years of age, badly in need of repair and redecoration. House is cold in winter and hot in summer. Conveniently located near smoky factories, noisy railroad yards, and receives frequent fragrance from nearby stockyards. The neighborhood is highly deteriorated and is well supplied with all the factors that encourage crime and delinquency. Heavy truck traffic in area, no nearby playgrounds, and firetrap school-house within walking distance. Best thing available for nice Negro family at exorbitant rent.

"If the truth were admitted," says Reginald A. Johnson, Director of Field Services of the National Urban League, "the foregoing would be a typical advertisement describing rental property for Negro occupancy in one of our larger cities."

Will the Riding Public Stand For a Decaying Transit Business?

"The ultimate choice will be made by the riding public, boss in this industry as in almost no other. That final choice will be recorded by the dropping of coins into or the withholding of coins from the industry's fare boxes."

FACED by a tradition of a fare of not over 10 cents and recent boosts in wages and other costs, the American Transit Association in its recent convention paid small attention to the public aspect of its service, and paid primary attention to what to do to exist as private enterprise.

Average hourly wage rates have risen 70% above pre-war; materials 50%; taxes are almost double those of 1939. Fares have increased on the average only about 10%. The public demands better service. Labor demands higher wages. Transit service, never having been adequate, can hardly be reduced without effective public protest and a roar from City Hall. There are three ends possible to this dance of death. The unlikely one is for the workers as well as their leaders to be convinced that their industry has an economic ceiling and adjust their desires accordingly. The second is for the local government to add the transit service to the other municipal services and pay the deficits out of taxation. The third is for communities where satisfactory service cannot be rendered at present costs to accept a rate of fare that will permit efficient operation.

This dilemma was sensed by Charles E. Ebert, President of The American Transit Association, in his convention address. In the status quo of business, the obvious response to rising costs is higher prices. President Ebert sees the necessity to educate the public and their officials to a fare exceeding 10 cents.

Is Public Transit a Business?

The sins of the founding buccaneers of local transportation caught up with the second and third generations of operators in the 1920's. Since then, bankruptcy and receivership have been an accepted attribute of the business of moving the millions. How to struggle out of the mire has been the theme of A.T.A conventions for years. Proposals have included "better public relations," "better labor relations," "modernization of plant and equipment," "reduction of street-traffic congestion," "good publicity and advertising," "fairer taxation."

Claude M. Gray, President of the Baltimore Transit Company, proposed combining all these into the total objective of private enterprise: "Let's try to make some money." Mr. Gray pointed out that this objective cannot be attained by neglecting any of the foregoing components. He believes that a transit property that makes money, or pays expenses, is run in the public interest whether privately or publicly owned.

Guy C. Hecker, executive manager of the American Transit Association, says: "The problems of the cities require the best thinking of public officials, business leaders, and transit officials. Only by working together for an over-all solution can American communities hope to solve the question of traffic congestion and decentralization which is threatening the existence of American cities as we know them today."

In the last ten years there has been a public awakening to the vital local importance of adequate city transportation and a growing awareness of its carrying efficiencies and the local obligation to aid in the solution of its problems. Mr. Gray presented evidence of this changed public attitude on the part of business leaders and city officials.

This idea of solvency was pursued by Morris Edwards, vice-president of the Cincinnati Street Railway Company. "Whatever the form of ownership, the essential problem is to make local public transportation pay its own way." He sees higher fares for which better service should be provided in advance of demand for it. Mr. Edwards posed the question which is the subheading of this article.

The need for an adequate fare was further shown by J. E. Heberle, vice-president and comptroller of the Capital Transit Company. Comparison of the status of 20 large systems in the first half of 1946 with that of 1947 revealed a $6.000.000 deficit this year against an $11.000.000 net income last year. The deficit would have been greater had not some of the companies increased fares. In the transit industry, wages are a large and immediately felt element of cost. The larger volume of passengers which permitted absorption of higher costs is on the point of declining. "Programs of modernization of service cannot be sustained unless an adequate fare structure is provided."

What Some Cities Are Doing for Transit Relief

LOS ANGELES.—Decentralized Los Angeles saw the handwriting on the wall and now has a Chamber of Commerce Metropolitan Traffic and Transit Committee devoting much of its time to studies of rapid-transit connections with the downtown area over projected freeways.

DETROIT.—The auto capital of the world has completed and officially adopted a Master Plan of Trafficways covering expressways, major thoroughfares, and secondary streets which provide fully for all transit needs.

CLEVELAND. — Expressway plans in Cleveland are being worked out in collaboration with transit engineers, because these highways will be used for either express bus or rapid-transit lines.

LOUISVILLE. — This city has plans ready for two expressways and an inner loop. The city has expanded its one-way streets, connecting one of its large residential areas with the downtown centers, and expects to connect three other population centers through use of parallel one-way streets.

CINCINNATI. — Transit officials and transit consultants have concurred with city planners in using expressways for transit vehicles to give express service to outlying and suburban communities.

NEWARK.—In Newark, there are indications that the Public Service Coordinated Transport shortly will convert its subway system from rail to trolley-coach operation in accordance with recommendations made by the Newark Central Planning Board.

BOSTON.—Has under construction or authorization numerous projects including the extension of rapid transit by subway and surface to Boston's International Airport, and express highway

access from the north via East Boston Tunnel to the central business district. The Massachusetts Legislature also created this year a Metropolitan Transit Authority to purchase the assets, property, and franchises of the Boston Elevated Railway Company, and the company recently passed from private to public ownership.

PORTLAND, ORE. — Realizing the importance of mass transportation to the city, a Transportation Planning Commission was formed, consisting of representatives from the City Planning Commission and the Traffic Safety Commission and seven lay members. The Commissioner of Public Utilities is chairman. The city engineer, the traffic engineer, the police traffic captain, and the transportation engineer are advisory members without vote.

PHILADELPHIA. — The Philadelphia Transportation Company is participating in the development of all phases of city planning which affect its properties and operations. Representatives of the company are active as members of the City Planning Commission's Technical Advisory Committee on Local Transportation. All matters of community development in which transit routes or services play a part are referred to this Committee.

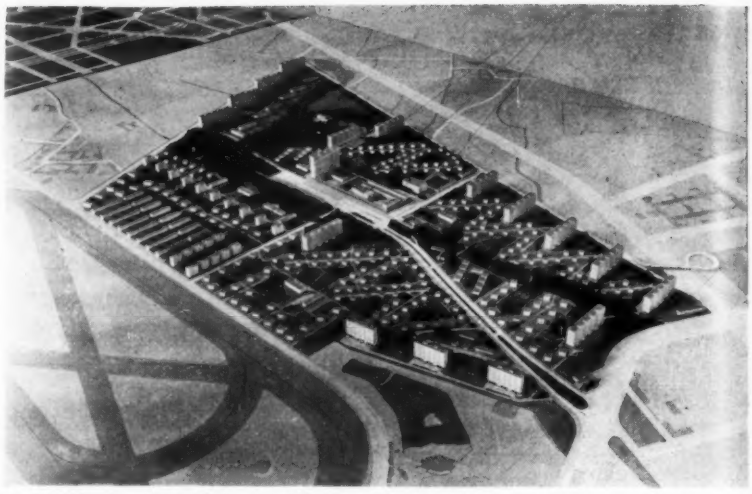
PITTSBURGH.—Pittsburgh has drawn careful plans for the rehabilitation of its downtown "Golden Triangle." Federal, state, county, and city authorities are working closely with the Pittsburgh Regional Planning Association in developing a comprehensive system of transportation for the Pittsburgh region.

HOUSTON.—Houston recently established a new Department of Traffic and Transportation. Its director writes, "Without the aid of public transit, our downtown business district would be completely cluttered up with individual automobiles, and we could not handle them with existing street facilities and parking spaces."

MIAMI. — The Miami Traffic and Transportation Department made a thoroughgoing study of transit movements in its congested district and came up with recommendations concerning downtown routings, turns, loading zones, transfer points, and terminals. The Miami Transit Company put the recommendations into effect, and they are working out most satisfactorily.

FLINT.—This city has recently written a new franchise, spelling out specifically what the company can and cannot do. It includes such items as frequency of service, extension of existing or installation of new routes, loading of buses, a tax for use of city streets and provisions for an increase in fares.

LESLIE WILLIAMS
City Planning Engineer
American Transit Association



Model displayed at Milan Exhibition showing how the "QT8" experimental project outside the city will look when it is completed.

Milan Exhibit Features "Plan to Reality"

REVIVED after a period of seven years, the Eighth Milan Triennial International Exhibition of town planning, architecture, building materials and furniture, held this summer in Italy, featured visits to the construction site of one of the displays in the exhibit. A new section of Milan, known as the "QT8," has been opened for a group of public buildings and for housing, developed on a neighborhood unit basis, for 10,000 people. This experimental quarter is designed to serve as a contribution to national reconstruction by making use of the most modern planning and architectural theories and methods of building construction and organization.

Foreign planners and architects who took part in the Milan exhibition exchanged theories on the site about the area's development. Work was well under way on the streets and sewerage system, on a 500-unit veterans' housing section, and on the new Milan municipal building. NORMAN J. GORDON

Taxicab Regulation—Some Recent Cases*

A COMPARATIVE newcomer into the field of businesses which are considered to be public utilities is that of the operation of taxicabs. Many cities are now enforcing strict regulations upon them and requiring certificates of public convenience and necessity as a prerequisite to their operation. One of the recent cases involving such a requirement arose in the City of Philadelphia in an action to restrain the transportation of passengers in taxicabs for compensation without the securing of certificate of public convenience. It was held that the operation of such vehicles, marked "G.I. Taxicab Association," which picked up and delivered passengers, accepting whatever fare was given them, constituted the operation of a public utility without a certificate in violation of the Public Utilities Law. Similarly, in an unreported case, the Chancery Court for Carter County, Tennessee, held that a City of Elizabethton Ordinance licensing taxicab drivers and requiring public liability insurance and certificates of public convenience and necessity as a condition precedent to operation was valid. However, the Texas Supreme Court held that the City of Houston could not collect a license fee for the privilege of operating taxicabs on the city streets, notwithstanding the fact that the license fee was denominated as rental charge for the use of the streets, where the state had preempted the field of collecting license fees for the use of the public highways and had forbidden municipalities to collect such a fee.

In a North Carolina case it was held that the enforcement of an allegedly invalid municipal ordinance requiring taxicabs conveying passengers to and from a bus station to park in and to receive or deliver passengers from a lot in front of such bus station would not be restrained in an action by the taxicab owner who was operating from his service station adjacent to the bus station, where the owner's property rights would not be irreparably injured by the threatened enforcement.

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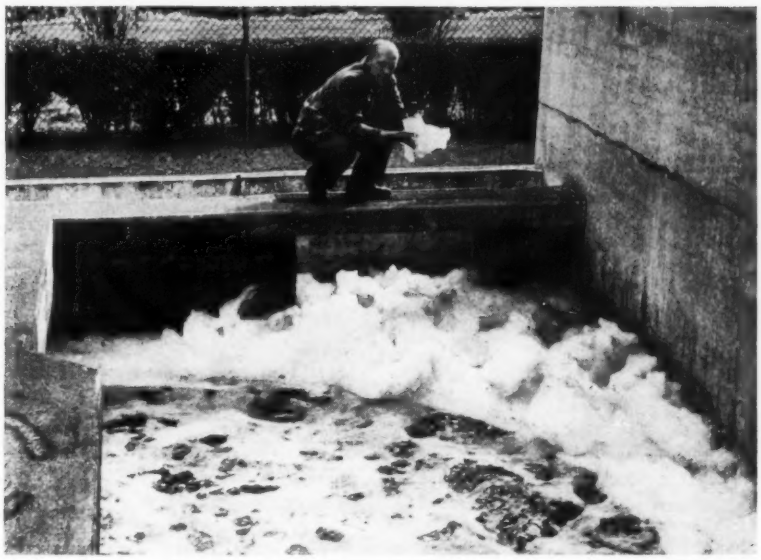
* A section from the report submitted to the National Institute of Municipal Law Officers, October 1, 1947, by its Committee on Public Utilities; City Attorney Max Kier of Lincoln, Nebr., Chairman.



Plant Supervisor Klein holds a sample of the foam that blanketed his aeration basin. Conditions were relatively quiet when this shot was taken.

What Caused the Suds In the Sewage Treatment Plant?

Excessive use of synthetic detergents, Mount Penn, Pa., officials believe.

LATE last October, Lewis L. Klein, supervisor of the Mt. Penn, Pa., sewage-treatment plant, looked at his normally well-behaved aeration tanks with some dismay. Much to his surprise, he found that the water, instead of being ruffled by the action of the diffused air, was covered with a huge blanket of billowing white suds—suds that would have warmed the heart of the housewife working over a Monday morning wash; suds whiter and thicker than foam from freshly drawn beer, but suds that had no place in an aeration tank.

Supervisor Klein is familiar with his job. He is interested in all sewage-works meetings where operating peculiarities are discussed and analyzed. In most situations he knows what to do to keep his plant operating smoothly. Still, when a white, frothy foam 2 to 5 feet thick suddenly billows up in the aeration tank, rises over the catwalk, spills over the sides of the tank itself and onto the adjoining lawn, he is stumped.

He called Gordon B. Risheill, head of the sewer committee on the Mt. Penn Boro Council, and together they called Gilbert Associates, consulting engineers, of Reading, Pa., for help.

The consultants arrived, made a number of analyses, and reported that the suds leave a thick grease on the walls of the tank, that they produce a poor condition in the activated sludge, and that they carry through the entire treatment plant, producing a white foaming effluent that discharges into the receiving stream.

Samples Distributed

What caused the suds isn't positively known, but Supervisor Klein and Sewer Chairman Risheill have at least one suspect in mind. On the previous day, the Mt. Penn area had received the concentrated attention of a company making "soapless" soap, described better as synthetic detergent. Solicitors canvassed the entire community and distributed free samples to each home, in the stores, and elsewhere. The next day the plant began having its trouble.

The consultants, to an extent, confirmed their suspicions of the detergent. Tests indicated that a dilution of approximately one part detergent to 20,000 parts of water would create the form which was observed at the plant. The foam, furthermore, carried small particles of dirt and grease up the sides of the aeration tanks, creating more cleaning work for the operators.

R. W. Simpson, sanitary engineer of Gilbert Associates, Reading, Pa., consultants for the Borough, felt that the combination of the detergent with the greases and calcium soaps in the sewers might account for the foam. The foam is always at its "best" following low night flows, when the concentration of detergent probably is high in relation to sewage flow.

Manufacturer Helpful

The manufacturer of the detergent made no effort to disown responsibility and instead offered prompt help. Chemists with the company estimated that probably the housewives used the detergent at double the quantity recommended, thus making an abnormal concentration in the sewage. They also supplied a defoaming agent that could be added to the aeration tank to eliminate the foam immediately if required.

At present, the situation still is under study. Supervisor Klein looks with some apprehension on Tuesday mornings if the use of these detergents becomes widespread. Far be it from him, he says, to stand in the way of a successful family wash. All the same, he wishes housewives would exercise discretion when they use the synthetic detergents.

A sailboat race in Mission Bay at San Diego, Calif.

Tidal Mud Flat Being Transformed To a Spacious Recreational Area

By GLENN A. RICK
City Planning Director
San Diego, Calif.

TOURISTS and recreation are an integral part of life in Southern California. The tourist trade constitutes what amounts to a major industry here, paralleling in revenue the income from agriculture and falling only slightly below the industrial and navy payrolls.

A project to provide additional recreation facilities for thousands, which at the same time will be a source of large revenue to the city itself, is under way in San Diego. Its economic potentialities and significance were the determining factors in placing this undertaking at the top of San Diego's post-war plans.

With the cooperation and assistance of the state and federal governments, Mission Bay, a shallow tidal mud flat in the city of San Diego, is being transformed into a multi-purpose project combining a small boat harbor, an aquatic park and a vast recreational development, with many of its acres retained as a wild-life refuge. The ultimate cost is estimated to exceed $16,000,000.

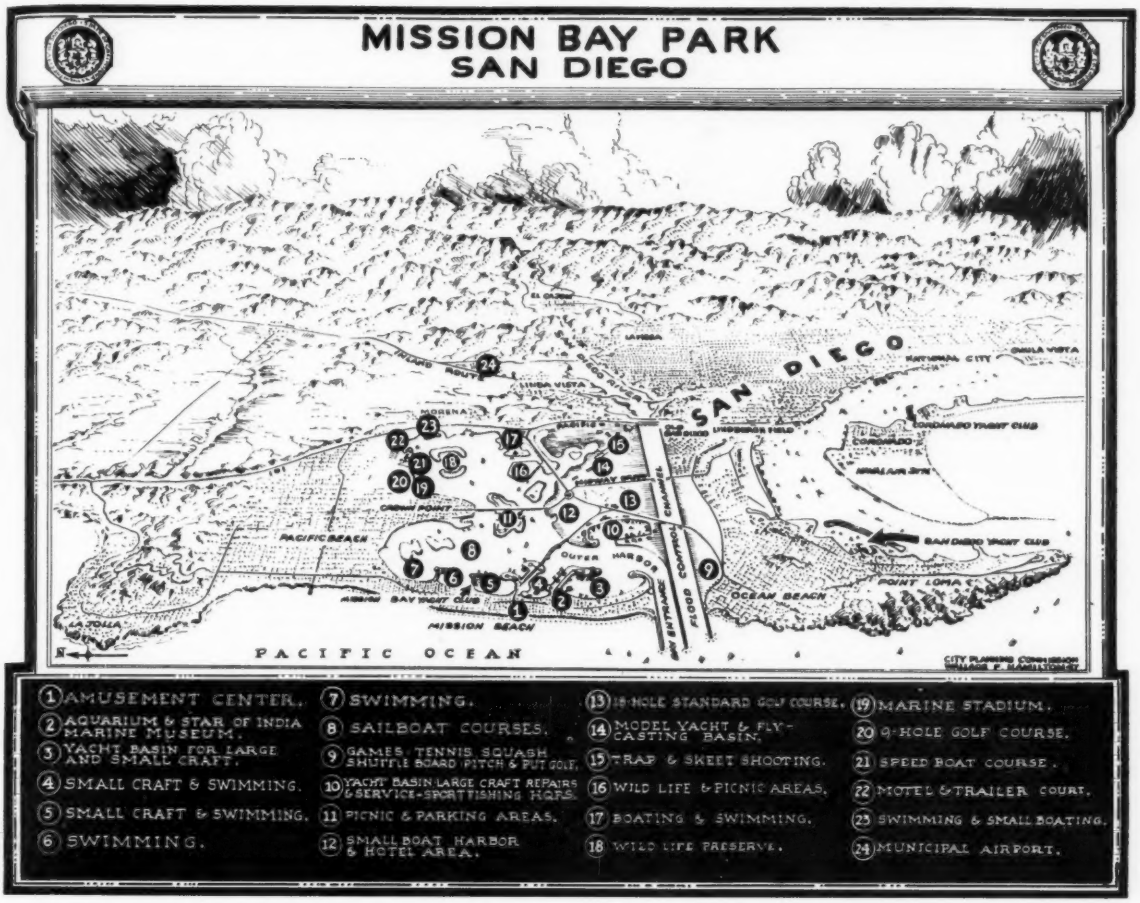
The state turned over about 2,600 acres of tidelands and waters of Mission Bay and agreed to spend about $2,000,000 on the control of flood waters of the San Diego River, which empties into Mission Bay.

The Federal Government, after a study of the favorable report of the army engineers, authorized this project for flood control and navigation at a cost of about $6,000,000. Two rock jetties, for which plans have been completed, will cost about $1,000,000. This amount was appropriated in 1946.

The progress photo shows the extent of dredging and filling operations in the Mission Bay project. The light colored areas in the picture indicate where the 3,600,000 cubic yards of sand have been placed to create 237 acres of new land. Not clearly discernible in the photo, but of equal importance, are the 313 acres of recently created deep water adjacent to the filled areas.

The City's Part in the Enterprise

The people of San Diego have given their willing and enthusiastic support to this idea by putting through a $2,000,000 bond issue, the City Council giving assurance to the United States Engineers, the state, and the federal government of another $1,500,000 now available, and pledging a total amount of $8,000,000.


MISSION BAY PARK
SAN DIEGO
SAN DIEGO
PACIFIC OCEAN
OCEAN BEACH
MISSION BEACH
PACIFIC BEACH
POINT LOMA
1 AMUSEMENT CENTER.
2 AQUARIUM & STAR OF INDIA MARINE MUSEUM.
3 YACHT BASIN FOR LARGE AND SMALL CRAFT.
4 SMALL CRAFT & SWIMMING.
5 SMALL CRAFT & SWIMMING.
6 SWIMMING.
7 SWIMMING.
8 SAILBOAT COURSES.
9 GAMES: TENNIS SQUASH SHUFFLE BOARD PITCH & PUT GOLF.
10 YACHT BASIN LARGE CRAFT REPAIRS & SERVICE-SPORT FISHING HQRS.
11 PICNIC & PARKING AREAS.
12 SMALL BOAT HARBOR & HOTEL AREA.
13 18-HOLE STANDARD GOLF COURSE.
14 MODEL YACHT & FLY-CASTING BASIN.
15 TRAP & SKEET SHOOTING.
16 WILD LIFE & PICNIC AREAS.
17 BOATING & SWIMMING.
18 WILD LIFE PRESERVE.
19 MARINE STADIUM.
20 9-HOLE GOLF COURSE.
21 SPEED BOAT COURSE.
22 MOTEL & TRAILER COURT.
23 SWIMMING & SMALL BOATING.
24 MUNICIPAL AIRPORT.

Part of the development plan for San Diego's 4,000-acre aquatic park.

Thus far the city of San Diego has spent about $1,800,000—land purchases costing about $800,000, dredging a little over $600,000, and advances amounting to some $264,000 to state and federal governments, while the rest has gone for miscellaneous improvements such as water and sewer lines, piers, floats, boathouses, recreation buildings, and engineering. The City Planning Department, in cooperation with the Army Engineers, is responsible for the design, engineering, and supervision of construction.

Dredging Contract

San Diego has recently let a new dredging contract for another 1,675,000 cubic yards at a cost of $289,000. This work will be done in the eastern portion of the Bay.

The 1,900 acres of water as well as the 1,700 acres of land in this Mission Bay development plan will be owned by the City of San Diego.

Looking ahead to the anticipated returns to the city, San Diego is encouraging the lease of areas in this land for commercial development, and has already received about 100 applications from firms and individuals planning various business setups, ranging from good hotels to boat concessions. Insistence, however, is made on a high standard in construction and maintenance.

Use of Voting Machines Spreading Over the Nation

VOTERS in many communities used voting machines for the first time last November 4. These included the Ohio counties of Clark (Springfield), Montgomery (Dayton), and Lake (Painesville); the Pennsylvania counties of Northampton and Berks (Reading), and the municipalities of Yakima, Wash., and Stafford, Essex, and Clinton, Conn., according to the International City Managers Association.

Philadelphia depended entirely on voting machines for the first time, because of the recent purchase of 850 more machines. In Boston, residents of the first four wards used nothing but voting machines, also for the first time, and purchase of 500 machines is pending. Detroit will purchase 200 to 300 more machines this fall, and election commissioners authorized reduction of election personnel in machine-equipped precincts. New York State is completely equipped, using more than 12,000 in all precincts. In Chicago, city and Cook County residents voted bond issues including $1,000,000 to finance voting machines. Fifty machines were used in the election on a trial basis.

There are now more than 35,000 voting machines in use in the United States, located in more than 3,780 communities in 23 states. Among major localities adding to their supply of voting machines this year were New York; Buffalo; Syracuse; Hartford, Conn.; Harrisburg, Pa., and Longview, Texas; Grand Rapids, Mich., and Tacoma, Wash.

Advantages of voting machines are speed and accuracy in voting and counting ballots, and long-range economy. Costing about $1,200 each, they reduce election costs considerably.

Seattle's experience with these houses, especially designed to be heated with electricity, indicates that electric heat can compete with other fuels only when the price of current is kept down to a quarter of a cent per kilowatt hour.

Electric Furnace Heat?

Seattle discourages its use

THE Seattle City Light municipal system not only discourages the use of electricity to heat homes, but it charges the homeowner a higher rate for the service. In a leaflet distributed to the public, officials tell why.

These are some of the questions that the leaflet answers:

Why must the rate for electric home heating be higher than other rates?

Because electric power for home heating is used in quantity only three months of the year. During the other nine months City Light maintains the service, ready at the flip of a switch, but does not get much revenue for it. City Light's expense, however, continues.

Will heating my home 100% electrically save me money?

No. It will cost you more. When a 100% electrical heating rate is established the cost will be undoubtedly high.

Electricity at present is a premium fuel and will not compete on a cost basis with other fuels commonly used in this area except in very unusual cases where the present method is extremely inefficient and wasteful.

If I install 100% electric heating in my home now under the regular residential rate, is my rate for electric heating likely to be increased soon?

Yes. As has been explained, the residence rate was not intended for house heating. The rate is exceedingly low and is based on year-around use. The city will establish an electric home heating rate for those persons who want the convenience of 100% electric heat and who are willing to pay a premium for that convenience.

Is it practical to use electric heat as an auxiliary to installations using other fuels?

Yes. Many homes served by City Light have auxiliary electric heaters. They are used principally in the spring, summer, and fall, whenever little heat is needed and the main heating plant is shut down. Such use is very practical and economical, and comes under the regular residential rates.

Auxiliary electric house heating is distinctly different from 100% electric house heating. Auxiliary units are comparatively small and do not overload the present system. They are undoubtedly a great convenience as a source of quick heat in the bathroom, rumpus room, nursery, and other places which normally are only intermittently occupied by members of the family.

Does City Light have surplus power during the winter that could be sold for heating at lower than usual rates?

No. City Light is building up its generation and distribution facilities as fast as it can, but has not been able to catch up with the demand. The number of City Light customers continues to increase, and more and more electric ranges and water heaters are going on City Light lines. As a result, City Light has been buying power from the Bonneville Power Authority for the last five years. Other utilities in the Northwest are doing the same thing, and now it appears that the Bonneville Power Authority facilities will be hard pressed to meet winter demands.

About how much would it cost me to heat my home 100% electrically under City Light rates?

It is impossible to answer this question with any degree of accuracy. The size of a home, type of construction, quality of insulation, number of windows, etc., must be considered. The personal habits of different families result in a wide difference in fuel consumption for heating. And City Light does not yet know exactly what its heating rate will be.

To give a rough estimate, the cost of heating an average, well-insulated home 100% electrically will probably cost three times as much as combustion fuel.

Is my present home suitable for 100% heating with electricity?

Not unless it is of moderate size, adequately insulated and properly wired.

What would the rate have to be for electricity to make it equal in cost to oil as a source of heat, figured on the basis of heat units (B.T.U.'s) delivered per dollar?

One-quarter cent per kwh. It would be impossible to offer this rate, as it is far less than City Light's cost of delivering power to a customer.

The only time that electricity can compete successfully on a cost basis with other fuels for home heating is when a small amount of heat is needed in certain rooms, such as a bathroom. Then small auxiliary electric heaters can do the job better than a furnace, because the furnace is costly to start for a short period and sends its heat through the entire house.

Essentials For Healthy Municipal Finance

By CARL H. CHATTERS
Professor of Municipal Administration and Finance, Northwestern University Evanston, Ill.

MUNICIPALITIES are facing inflated costs for operating, maintenance, and construction. Soon they will contend with rising interest rates on borrowed funds. Their revenues have increased some, but the activities and expenditures seem about to outrun their income. What can be done about it? Here are a few essentials.

Making Revenues Adequate

Before discussing the detailed measures to make revenues adequate to meet expenditures, may I list briefly a few things that are necessary to healthy finances in your municipalities:

1. The best guarantee of fiscal health is to balance the budget consistently over a long period of years. It is balanced only if all necessary operating and maintenance services and all necessary construction have been carried out and have been financed. If the work is not done, or if the bills are not paid, the budget is not balanced.

2. Fixed charges of every nature should be kept as low as the social and economic needs of the community will permit. Keep debts low, keep debts flexible.

3. Any program of state aid or state-shared taxes must be devised so that the yields to the municipalities are both certain and constant. Otherwise the municipalities expand their expenditures and services when state aid is high and get into difficulties when state aids or state-shared taxes recede. Stability and certainty of municipal revenue must be achieved.

4. Every municipality needs to set down the fiscal policies it expects to follow. Each should make a detailed fiscal plan to carry out these policies. The whole scheme will necessarily be revised from year to year. But you must either plan or drift into currents which may be unfavorable to the direction in which you really wish to go. When you make no plans, then your plans are made for you by circumstances which you did not try to control.

5. Abolish earmarking of funds and special levies for particular activities.

6. Do away with special boards, commissions, and authorities which have power to spend money but do not have to take the responsibility for raising money.

What are some things that can be done on the expenditure side so that your revenues will be more adequate?

1. Wherever waste appears in any form, from any cause, it must be wiped out.

2. Do not voluntarily add a new service or activity until you know you can finance it and until your citizens know about and approve this new activity and the resulting expenditure.

3. If you arrive at a point where your revenues are inadequate, then you may have to reduce the number of services you perform or the extent of the services.

4. As a group of municipalities represented by the American Municipal Association, you need to determine what local activities can appropriately be financed from funds raised locally and what activities or parts of each activity should be performed or financed by the state or federal governments. This is an important part of a program to achieve stability. Some questions that would seem appropriate are:

(a) What part of unemployment relief shall be borne by local governments if relief costs again become an issue?

(b) Are there unusual, non-recurring items, such as snow removal, which might be financed from state highway funds?

(c) Are the grants and shared taxes you receive from the state on a fairly constant, dependable basis?

(d) Do some activities of government receive a greater proportion of the total revenue than they should?

(e) Do municipalities have the authority in their charters or in the statutes to raise those types of revenues which seem like reasonable local taxes?

5. Curtail services to suburban areas that do not pay the full cost. Once a suburban area has refused annexation, no city should be compelled to furnish any services to it. Here is an illustration. A suburban area that wants fire protection from an adjoining municipality should pay an amount equal to its total assessed value times the tax rate which the city collects from its own residents for fire-protection purposes. Fire protection, like many other municipal activities, is a standby service and can be charged for properly only on that basis.

Now let us see what municipalities may do to increase their revenues.

1. The amusement tax is an ideal local tax. The federal government is likely to reduce or abandon this tax. Municipalities should be ready to step in. The yield can

Interest Rates on Municipal Bonds

The interest rates on municipal bonds will probably continue to rise. In any event, they are far more likely to increase than to go down. This course is indicated by current market trends, by a greatly increased volume of tax-exempt bonds, and by reduction of federal income taxes. As interest rates go up, the total volume of debt will also increase. Cities have not kept pace with construction needs for twenty years. Not only do they have to catch up on needed improvements, but they have to pay greatly increased prices. Both new construction and renewals will be affected. If something that you built in 1926 wears out or is obsolete, you pay twice as much as you did then. The increased cost of construction and the resulting debt can be offset in part by using shorter bond maturities, by making bonds callable in some cases, and by using more care in setting up and selling bond issues.

The level of prices and costs may change some. But they will recede only a little unless there is a general depression. Of course, if another war should come soon, the national debt would reach a trillion dollars and hopeless inflation would wipe out all semblance of an orderly price system. As far as the cities are concerned, they must reconcile their affairs to higher prices and collect higher income for their services and commodities. That is what private business has done. Cities will get their higher income from better-administered property taxes, new local revenues, higher state aid or state-shared taxes, and more equitable reimbursement for services to outside areas.

But it would be well, before you increase local revenues or ask for greater state aids, to be certain that you are collecting as much as you can from present sources, that your present income is spent effectively, and that your citizens know this. And finally, the pressure of expenditures against revenues will force you to work out better arrangements with your county, your suburban area, and your state. It is a challenging, interesting, and by no means hopeless task.

be substantial, particularly in larger cities. Federal income from this source is more than $400,000,000 annually. If municipalities use this tax, they should fix the tax by brackets, with a graduated tax in even cents in each bracket. In other words, do not make a tax of 3% or 5% of the admission charge but make it one cent for an admission of 15 cents or 25 cents and an additional cent for each 15 cents or 25 cents or fraction thereof. Then it will not be a tax on the place of amusement but a tax on the person going to the amusement. This is easier to defend.

2. Every individual or business receiving special governmental services should pay for them.

3. In general, license fees should be graduated so that a large business pays more than a small one. Most license fees at present bear proportionately more heavily on the small business.

4. Be sure that municipal utilities are entirely self-supporting, including their debt service and a tax equivalent.

5. Charges to other municipalities should be made on the same basis as charges to your own citizens. This has already been illustrated.

6. Get the maximum revenue from the use of idle funds and the rental of city properties. If you have airports, make your contracts so that revenues expand as the volume of business grows. No long-term, fixed-charge airport contracts are sound. And remember that revenue from concessions may bring more money than charges to the airlines.

7. Insist on municipalities getting a share of motor users' revenue more nearly in proportion to their needs. This is not diversion. It is diversion from one purpose to another when real estate taxpayers in the cities finance city streets while the money paid by city motorists is spent for rural facilities. Maybe the municipal dwellers can't afford to finance all that the state highway department wants to do, even though we all admit it does a good job. That's just like saying it's economy to buy good clothes, but you and I know that you can get hard up buying nice things that are worth every cent we pay for them.

8. If prices, wages, and real estate values stay up, it will not be unfair to increase real estate assessments further; in fact, such increases will be necessary.

9. In some municipalities you may want, and you may need authority to levy, a local payroll or income tax at a low rate. Local sales taxes, however, are not generally feasible and can be used best when collected as part of a state tax. Both local income and local sales taxes are strong medicine and should be used only when carefully prescribed.

10. State aid and state-shared taxes should be distributed on the basis of relative need to a greater extent than is done now. The distribution should be fair, not only among municipalities, but among the various tasks which governments perform. State aid may be more desirable than increased local taxes or transfer of functions to the state.

11. All cities are not alike, and the kinds of revenue that some can use appropriately are entirely improper in others. Resort cities, trading centers, manufacturing centers, residential suburbs, each have a different economic base. To a certain extent, the revenue sources in addition to the property tax and state aid should be determined by the economic and social background of your individual community.

From a talk presented at the twenty-fourth annual conference of the American Municipal Association, in New Orleans on November 6, 1947.

New Way to Solve Industrial Housing Problem

By **FREDERICK H. ALLEN**
Harrison, Ballard & Allen
Housing Consultants*

IF YOUR community has industries with plant expansion plans and financial institutions with money to invest, why not get them to work together to build the housing which will be needed to attract new workers? A new formula has been developed whereby such collaboration is possible.

In essence, the formula is a guarantee by industry to the insurance company or other financial institution of a free and clear return on the cost of building the housing for the first 10 years following completion. The amount of the return can be settled by each individual industry, but in some cases the original investment by the insurance company can be amortized as much as 50% in the first 10 years of its existence.

This guarantee is part of a clear-cut investment offer based on careful groundwork. The industry employs a technical group to make the initial study which covers such items as the company's needs, analysis of the housing market, selection and description of a site, availability of utilities, etc. These facts are assembled in clear, descriptive form similar to a bond or stock prospectus. When the outlines of the housing program have been determined and the amount of the guarantee settled upon, the insurance company or other financial institution enters the picture and decides whether or not the assembled facts in the prospectus add up to a good investment.

Contingencies Covered

With the rapid amortization of the original investment guaranteed by the industry, the insurance company will be in a position to meet competition arising out of a possible slump in prices and costs. The most sanguine estimates of building-cost reductions being made at this time suggest a maximum decrease of 20% in the next several years, though the majority of prognostics estimate that costs will decline not more than 10% from the present levels. Even at the higher estimate of 20%, a mark-down of 30% to 50% in the principal during the first 10 years of a project built today places it in a favorable competitive position. This is a much better mark-down than the 25% amortization schedule by FHA in the first 10 years.

If the insurance company is interested in the investment and the guarantee rate offered by the industry, a "memorandum of understanding" between the industry and the insurance company is executed. Certain provisions of this memorandum must be fulfilled, however, before the insurance company is obligated to build. The most important ones are:

(a) Definitive estimates based upon lump-sum bids must not exceed X dollars.
(b) Agreements with local governments concerning sewers, water, roads, etc., must be settled.
(c) Land acquisition and all preliminary plans must be approved by the insurance company.

If the insurance company withdraws after the taking of bids because construction costs are higher than the amount agreed on in the memorandum of understanding, the industry is to assume costs of the preliminary work up to that point. But if the terms of the "memorandum of understanding" are satisfactorily carried out, the insurance company is committed to acquiring the land, proceeding with working drawings, reimbursing industry for preliminary advances, and proceeding with construction. The insurance company will own and operate the project.

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* The firm, located at 123 E. 77th St., New York 21, N. Y., is equipped to act as a consultant on, to coordinate, and to administer all operations pertinent to housing, from a survey of area needs and the selection of a site to the supervision of construction and the establishment of management policy.

PHOTOS COURTESY OF PORT OF NEW YORK AUTHORITY

A five-gang Worthington Blitzer cutting 20 acres an hour at LaGuardia Airport.

Mowing LaGuardia Airport

OF LAGUARDIA Airport's 550 acres of flying area, 266 are in grass and must be mowed regularly to maintain appearance and to control dust raised by starting planes. The grass area is broken by the runways into 28 plots ranging from 0.47 to 44.28 acres each. Ten of them are under 4 acres each. The plots opposite the apron have been worn bare by air traffic. Any attempt to maintain turf on them has been discontinued, and the areas have been treated with a soil stabilization compound.

Mowing began shortly after the field was opened for operation in December 1939. Now after eight years the grass is in good condition, except where settling of part of the field has brought difficulties in the shape of driftwood, slime, and oil carried up by the tide from Flushing Bay.

The grass is 50% chewing fescue, 25% fancy red top, 15% perennial rye, 10% white Dutch clover. It has proved to be an excellent mixture for this airport. It is thick and provides a good mat. No facilities are available for watering. Mowing season starts in early April and, weather permitting, goes on to October 15.

The entire area is cut in 7 to 10 days by 6 men, 2 driving high-speed tractor-drawn Worthington Grass Blitzers, and 4 operating Toro gasoline-engine mowers on the lawns near the Administration Building. Each Toro covers as much area in a day as a hand lawnmower can do in a week.

The Worthington 9-gang Grass Blitzer, operating on a smooth field at 25 mph, can cut 57 acres per hour. Owing to plane-made ruts, running speed at LaGuardia Airport is held to 15 mph. Even at this rate, a 9-gang unit can cut 35 acres in an hour.

Experience at LaGuardia has shown that a 5-gang unit is most practical for maneuvering around airport equipment. This team can cut 20 acres hourly at a tractor speed of 15 mph.

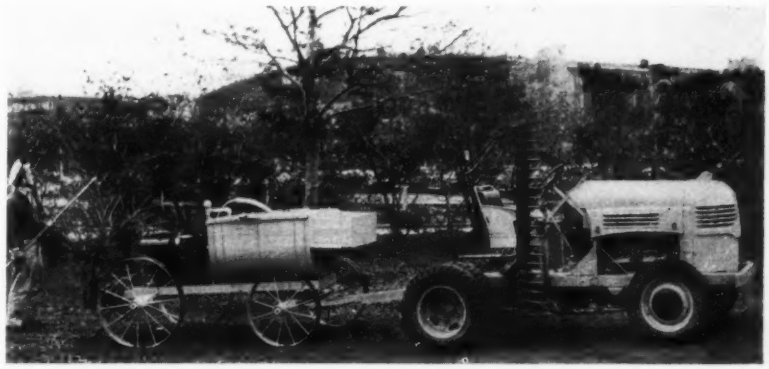
Each cutting unit is complete in itself; units can be assembled in 3-, 5-, 7-, and 9-gang combinations. A feature of this cutting unit is the frame construction—the cutting element is suspended from the frame. No roller is needed; only the pneumatic tires touch ground.

We mow our turf at frequent intervals to a height of two or three inches.

Thick turf, attained by frequent mowing, keeps down the dust from plane movements. This tends to reduce engine wear and passenger discomfort. In the case of turf runways, the grass covers stones which might be drawn into the propeller disc during motor run-up and cause propeller failure.

Another value of dense turf is that it absorbs rainfall. Unless the cutting is sufficiently frequent, the grass grows tall. Instead of spreading it thins out, and bare spots appear. These bald patches retain water and contribute to skidding and accidents.

Correct mowing requires selection of the right type of machine. In the first place, any machine on an airfield is a flying hazard. Therefore speed of mowing is important. Get the job over, or do it at night; and get the machine off the field.



Above right: This Toro gasoline mower does a week's hand-mowing in a day. Below: The Worthington tractor with sickle, hauling a Hardie spraying machine.

The San Diego Parkway

Carving a traffic artery out of a San Diego, Calif., park

IN THE center of San Diego is the city's 1,400-acre Balboa Park, a parcel of ground that San Diegans have set aside to show how this part of the country looked when it was young. Through it, extending in a north and south direction are the picturesque Cabrillo and the Powderhouse canyons, and stretching east and west are many short arroyos winding down between the mesa parkland.

But although Balboa Park stands as a sort of memento of San Diego's romantic past, it also inadvertently forms an obstacle to traffic flow from one portion of the city to another. And while residents of the city are proud of their colorful background, they are at the same time practical people. As long ago as March 1941, they went to the polls and voted eight to one to devote a 200-foot width through Balboa Park for the purpose of removing this civic blockade. The war checked activity on the improvement, except for the preparation of plans, which were completed by the California Division of Highways in 1945. Today the Division is supervising the construction of the freeway now being built by five different contractors holding ten separate contracts.

Sections of the Freeway

The freeway uses two roadway sections, each 24 feet wide and 8 inches thick, laid on 12 inches of selected materials of imported borrow, of which the top 4-inch layer had been stabilized with cement. The concrete pavements are separated by an island varying in width from 6 feet to 54 feet. All shoulders are protected by a bituminous surface treatment.

To provide the cement-stabilized subbase, the contractors have built a central mixing plant consisting of crushing and screening units and a Barber-Greene mixing plant with a capacity of 100 cubic yards per hour.

The stabilized material shows excellent results, yielding a strength of 500 pounds per square inch at seven days

Top: The Mission Valley traffic interchange, shown in the foreground, provides an important east-west by-pass. Below: This is one of the braided intersections of the San Diego Parkway that will make the traffic ingress and egress easy.

using a 4% cement content and 12% moisture. A Barber-Greene spreader, with the strike-off screed controlled by a wheel attachment riding on the side forms, laid the stabilized mix. It required no further shaping and was ready for an emulsified asphalt seal coat placed directly after rolling and compacting had been completed.

The 8-inch concrete slab that goes on this stabilized base is being placed by a streamlined all-mechanical operation. A 1½ cubic yard Multi-Foote mixer lays the concrete, a Jaeger screw spreader distributes it evenly across the subgrade, a Lakewood tamper consolidates it into a dense mass, and a Johnson power float brings it to a smooth finish. An earth and water blanket furnishes the cure.

Streamlined construction methods are being used on one side of this freeway.

Results of Completed Freeway

The completed freeway will provide San Diego with an adequate north-south artery connecting the business district with the residential sections of the city's north and east parts. It incorporates many interesting traffic separation structures. A "braided" intersection has been developed at Washington Street which gives an outlet to the east. The traffic interchange at Mission Valley Road provides a connection to one of San Diego's most important east-west by-passes. Perhaps a unique feature is the provision for equestrian traffic. The Date Street Bridge provides a separate lane for horses only, and connects with a riding trail that meanders over the hills of West Park and again crosses the freeway over the Upas Street equestrian overpass.

The free project involves the construction of 15 additional bridges. Only one existing structure could be utilized in the ultimate plan. This was the Cabrillo arch bridge built for the 1916 exposition.

The project also calls for the installation of a complete sprinkler system using more than 24,000 feet of pipe to aid the landscaping and roadside treatment. As most of the freeway follows a natural drainage course, a storm drain system with pipes ranging in size from 24 inches to 60 inches was provided throughout portions of the project.

Over 1,650,000 cubic yards of dirt with cuts as deep as 150 feet and fills as high as 60 feet were required by this construction. One cut alone contained approximately 300,000 cubic yards in less than a quarter mile.

The work is under the general direction of E. E. Wallace, district engineer of the California Department of Highways. The information in the article was supplied by K. C. Adams, Editor, *California Highways and Public Works*, the journal of the Division of Highways.

The late Walter Cooper, San Diego's City Manager prior to his death, played an active part in the early planning. Fred Rhodes, present City Manager, also took part in the project's development.

Maintenance Principles for Water and Sewage Pumps

TWO FACTORS dominate pump maintenance work, according to Joseph H. Hill, St. Paul representative of Fairbanks, Morse and Co., Chicago, Ill. One is cleanliness. The second is lubrication. The general rule is to go heavy on the first and light on the second. Mr. Hill brought this out in a talk delivered before the Water and Sewage Works Conference held recently in Watertown, S. D. He further enlarged on this as follows:

Cleanliness around the pump and the pump house is paramount. Grease on the floor constitutes a dangerous fire hazard. Dirt in the pump motor prevents a full volume of air to circulate through it and thus impairs its efficiency.

The lubrication system requires frequent inspection. Oil-lubricated pumps should have twice-a-day inspection to see that the oil in the drip cup is operating. Water-lubricated pumps may be inspected safely on a less-frequent basis. Most bearing failures in vertical hollow-shaft motors are caused by overoiling and over-greasing.

Never oil a pump while it is in operation. This may cause a siphoning action and throw the entire reservoir of oil on the windings of the motor.

Be careful not to turn the grease cup down too far in water lubricated pumps. The grease softens the packing and lubricates the shaft. Too much grease causes heating, which in turn melts the grease and forces it out.

Except in case of trouble, never pull a pump in less than five-year intervals. If the pump is free from vibration and is producing within 5% of the original volume, it should not be pulled even then. An 8- or 10-year interval is a good upper limit. When you do pull it, be sure to have a representative of the pump manufacturing company handy.

The only spare part of a turbine pump that it pays to carry is a thrust bearing. There is no point in trying to carry additional spare parts.

Watch out for spiders in control boxes. An occasional spray of DDT will keep these pests out and prevent burning the contacts.

Flush and grease motor bearings of centrifugal pumps once a year. Pumps delivered from the manufacturer are good for a year's operation without reflushing and regreasing. Clean the screen on the suction side regularly.

Packing is the most important feature of centrifugal pumps. See that there is a drip at the packing and that the packing is soft. Whenever it is necessary to replace the packing, take out all the old and put in new. Always be sure that the water-seal ring is directly under the pipe leading from the volute.

Everybody Plays in Murfreesboro

By ROBERT E. BERNE, *Director*
Middle Tennessee Office
Tennessee State Planning Commission

LIKE the citizens of so many other communities, the people of Murfreesboro—a small city of some 10,000 population situated in the blue-grass dairy region of middle Tennessee—claim their city as one of the best residential towns in the United States. This may be true insofar as the friendly spirit of the people and their gracious manner of living are concerned, but in many other amenities which constitute an ideal city Murfreesboro was, until recently, sadly lacking.

Recreation in Murfreesboro had been thought of as a responsibility of the individual. No playground apparatus was available to the children for use after school hours, nor were they allowed to use the gymnasium or other school facilities at the end of the school day. Unheard of was the thought of providing recreational facilities for adults. Parties and moving pictures were considered the chief means of amusement for people above the teen age.

Area Selected

A group of about twenty citizens, representing the civic clubs, churches, and school groups, determined to remedy this condition. As an informal recreation committee, they petitioned the Municipal Planning Commission to create a park and playground site in the town. Fortunately, the Planning Commission selected the ideal area for such a project, the Central High School grounds. This area, once the campus of a woman's college, has been owned by the city and county for the past two years.

The Planning Commission worked out a development plan for the park and presented it to the recreation committee. Because of irreconcilable views expressed by representatives of the various organizations on the recreation committee, it was impossible for the group to arrive at a decision. It became readily apparent that something drastic would have to be done to organize a body to make decisions and to determine policies without a lot of bickering.

To surmount this problem, a commission with the power to organize a recreation program, to administer the related details, and to levy taxes for recreational purposes was set up under a state enabling act permitting cities to create such commissions. The Planning Commission recommended this course of action to the City Council, with the result that a Recreation Commission of five members, representing all elements of the city, was appointed. This Commission consists of a contractor, who is the chairman; the school superintendent, two merchants—one a civic-club leader and the other a prominent church worker—and a laborer. For the first two months, the Recreation Commission met every week, but now that the program is well under way, it meets once a month. The first meeting was held with the City Council in order to arrange for a recreation tax. At that time, it was estimated that such a tax would produce $6,000 annually; but a recent estimate indicates a revenue of over $9,000.

The Recreation Commission recognized the need for a competent staff trained in recreation to handle the program, and that to get well-qualified people, good salaries must be offered. The caliber of the applicants for the position of recreational director was extremely high. Another full-time employe, college-trained in recreation work, has already been appointed to supervise the play of the town's younger people. Two other persons have been employed to assist in the summer-time activity.

Year-Round Activity

The Commission decided at its first meeting that Murfreesboro could well afford to support a year-round recreation program. Since it is impossible at present to construct a building for recreation purposes, the Commission has entered into an agreement with the city school board for the use of school property during the late fall, winter, and early spring months. Such activities as dancing, shuffleboard, ping pong, arts and crafts, and other indoor sports will be held in the school houses. Recreation is now available to everyone in the city, since the Commission felt that the program had a better chance of success if it catered to all age groups. Among other results of this foresight was a petition by the town merchants for use of the softball area on Wednesday afternoons, when the retail establishments in the city were closed. The softball league has two teams composed exclusively of retail personnel.

Facilities and Operation

Facilities now provided in the park include both a softball field and three tennis courts lighted for night play, and a young children's play area locally known as "Tiny Tot Town." A site has been cleared for an outdoor theater to be constructed next year. Work has been completed on outdoor shuffleboard courts, a volley-ball field, and croquet and badminton courts. In addition, the Recreation Commission operates a canteen on the park grounds. The profits of the canteen averaged about $150 weekly in the spring, and, with the advent of hot weather, the earnings are even higher. This money and the box-office receipts from the league softball games are put back into the program.

Children's Area

The "Tiny Tot Town" is equipped with apparatus designed especially for children. The feature that most appeals to the youngsters is the spray pool, consisting of eight shower heads sunk flush into a concrete apron 10 feet square, which can accommodate fifteen to twenty children at a time without crowding. Two huge sandboxes and one sand-modeling table have also been erected, with plenty of water nearby to keep the sand in working condition. Until trees are planted and grown, huge beach umbrellas have been located in strategic parts of the area to provide the necessary shade. The Recreation Commission obtained an army surplus hut 16 feet square for $25 and placed it in the center of the area to provide more shade. Mothers have found this a particularly desirable place for watching the children play. A jungle gym, swings, see-saws, and slides are among the other equipment included, the use of which is limited to children in the four-to-eight-year age group.

Immediately adjacent to the "Tiny Tot Town," so that both areas can be supervised by one person, is the older

children's free play area. Space has been provided for children up to the age of twelve years to play softball, volley ball, or any of the other games that are in demand at the time.

The Negro community is also benefiting from the recreation program. The grounds of the Negro high school are being developed into a park site, and the recreation budget provides funds for that community. One of the Commission's summer workers is now in charge of the program, but future plans include the employment of a full-time worker to direct Negro recreational activity.

Pledges Solicited

The tremendous amount of physical work accomplished by the Recreation Commission has not cost the city a penny of its own funds. Teams were organized to collect $100 pledges from the citizens; no more, no less than $100 was asked from each citizen at this time. Better than $7,000 was collected within the first week; enough, in fact, to get the construction under way.

Another source of revenue was also made available last summer when the city passed an ordinance giving to the Recreation Commission all fees paid by touring carnivals and similar expositions. As it stands now, the Commission is in sound financial condition.

Long-Range Plans

It will be several years before the entire park construction program is completed. Not until building costs drop will it be possible to build the proposed swimming pool. For the present, the Recreation Commission is making use of the pool in back of the high school. Since this pool is too small to accommodate the crowds that want to use it and is also poorly located with respect to the other park features, it must be considered only a temporary expedient.

Another contemplated project involves erection of a new high school on the west end of the park property and the razing of the present school. This would open up a huge area for further park and playground development. The park plan provides a football stadium in the void created by the existing school building.

More Play Sites Studied

By the time the Commission held its third meeting, events had progressed to such a degree that it was evident that more play area would be needed. The Recreation Commission is at present working with the Planning Commission to locate and develop two neighborhood playgrounds. It is hoped that these will be ready for use by the summer of 1949.

The success of the Murfreesboro recreation program seems assured. A city which once made no recreational provisions for any of its citizens, Murfreesboro, in the course of a month and a half, has begun a long-range program to provide facilities for all its people. The future promises a situation where "fun for all" will prevail. Then Murfreesboro will, indeed, become one of the best residential towns in the United States.

Small community determines to provide facilities for all of its people all the year round

COURTESY TENNESSEE CONSERVATION DEPARTMENT

Above: A section of "Tiny Tot Town," showing the spray pool with a sandbox in the rear. Below: Two teams of Murfreesboro's "Shorty" softball league in action. The stands accommodate over 500 people and are usually crowded when the field is floodlighted for the evening games. The canteen is in the background.

The new Monticello, Ga., water treatment plant.

Monticello Settles Water Problems

New filter plant insures this city's water supply future

THE city of Monticello, located in the heart of the Georgia peach district, had plenty of reasons to build its new water filtration plant.

In the first place, a lot of people and industries in Monticello wanted water. Two canneries wanted it; one owned by the County and used by local people, and one commercial cannery. A refrigeration and cold storage plant wanted it and demanded a high quality. A local outdoor swimming pool wanted and used city water in large and regular amounts. These industries alone used more water in the summer and fall months than the rest of the city. Normally Monticello uses 170,000 gallons per day, but in the summer and fall, this use runs to 370,000 gallons daily.

But use wasn't the only reason for needing a bigger and better supply. The old plant drew from an earthen reservoir on a small stream that didn't have a large enough watershed to meet the demand. The city had to tap another supply, putting in a temporary pumping station and raw-water line.

Old Plant Required Work

In addition, the old plant itself still needed a lot of attention. It consisted of a small mixing chamber and settling basin, two filters and two open clear-water reservoirs which leaked badly and were in a disintegrated condition. Even at normal winter flows, the settling basins held the water for less than two hours. The floc, never having the opportunity to settle out, swept over the settling tank wiers and onto the filter beds. The operators had to wash the filters every day and waste approximately 50,000 gallons daily in this operation.

Thus one is not surprised to learn how relieved the water officials were when the city fathers decided that despite price levels, they would proceed with a complete rehabilitation program. The city drew on the services of the Harwood Beebe Co., consulting engineers of Spartanburg, S. C., for the design of this improvement.

The engineers first decided to develop a new and adequate raw-water supply. They did this by tapping a stream that yields 750,000 gallons per day, thus making available an amount more than double the peak summer and fall demands. Moreover, they located the impounding reservoir so that it could be reinforced, if necessary, by another stream yielding 1,000,000 gallons per day.

When they were assured that an ample raw-water supply was available, the engineers then turned their attention to the filter plant. They built a reinforced concrete mixing chamber large enough to give the floc ample time to form, and followed this by supplying a settling basin that held the water for six hours instead of two. They supplied two Roberts Filter Co. filters, each having a rated capacity of 250,000 gallons per day, and finished off with a 200,000-gallon clear-water reservoir and a 25,000-gallon wash-water tank. Since the new settling tanks, with their longer retention period, allow almost all the floc to settle out, the water delivered to the filters is virtually floc-free, and the filters now run for long intervals without washing.

The coagulation basins also incorporate an interesting bit of design. The weir carrying water from them consists of a series of 1½-inch-diameter holes in a concrete slab. These openings are designed to give a differential of approximately one inch in the water level, thus assuring a uniform draw-off over the width of the basins.

Chlorination

The consultants gave a great deal of study to the chlorination process in the plant design. During preliminary work they decided to supply prechlorination facilities. Since the raw supply, however, was from a clear-running stream with a pH of 6.8 and freedom from algae, they decided to omit it until the need arose. Room has been supplied for an added chlorinator if required.

Before the new plant was constructed, the city used alum only for a coagulant, which, of course, meant a sharp drop in pH because of the water's low akalinity. The new plant overcomes this difficulty by using two new W & T Novadel feeders for lime, one to be used for after-feed, in addition to a dry chemical feeder for alum.

The city's present overhead storage facilities consist of one standpipe 90 feet high and 15 feet in diameter located a half mile from the business district. This will be reinforced in the near future by a 100,000-gallon elevated tank two blocks from the district.

The plant is operated under the direction of John Jordan, Superintendent.

Association of Municipal Legislators Organized at AMA Conference

THE organization of a National Association of Municipal Legislators was one of the important accomplishments of the twenty-fourth annual conference of the American Municipal Association in New Orleans, November 2 to 6. The new association will consist of city councilmen, aldermen, and commissioners, as well as any mayors who are council members. It will be a component of the American Municipal Association, and the secretary-treasurer will be a staff member of AMA.

Announcement was also made of the formation of a Municipal Administration Service of the American Municipal Association, to which individual cities over 100,000 population can subscribe and receive aid on problems of research, personnel, administration and legislation. This step was the result of a change in the constitution of AMA which has represented some 9,200 municipalities through 42 state league organizations. Under the new setup individual cities can become voting members of the AMA.

Among the spokesmen at the conference for the organizational change were J. Woodall Rodgers of Dallas, retiring president, and Mayor Fletcher Bowron of Los Angeles, newly elected head of the Association. Mr. Rodgers declared that municipal officials should "take off their coats and get in there and pitch before state and national legislators." In calling for a "new day for AMA," he pointed out that archaic state constitutions are hampering municipal progress, and that a new approach is needed to present a united front on major issues affecting municipalities. Mayor Bowron stated AMA was the logical vehicle to try to draw together the policies of separate city organizations on national affairs.*

Resolutions Adopted

Housing, public relations, fiscal problems, airport development, planning, traffic, and construction programs were some of the other items of key interest to the 600 delegates attending the conference. Resolutions were passed favoring municipal home rule, restoration of tideland rights to states and cities, and the formation of an intergovernmental agency to coordinate fiscal polices of federal, state, and local governments.

Also among the 13 resolutions adopted were those which called for the following:

Opposition to any change in the Federal-Aid Airport Act which would deprive local governments of the right to negotiate directly with CAA for allocation of federal funds;

Payments in lieu of taxes by the Federal Government to municipalities for all federal properties not used strictly for governmental purposes;

Enactment of state legislation to extend the powers of local agencies to include the land development function;

The halt of war housing unit disposal until such time as the supply of units offered for rental purposes more nearly equals demand;

The exemption of municipal governments from certain federal excise admissions and license taxes;

Amendment of the Social Security Act to provide old-age and survivors' benefit insurance coverage to municipal employes at the option of the governing board of such jurisdiction;

Amendment of the RFC Act to eliminate certain real-property tax exemptions.

*For excerpts from the talk by Mayor Bowron on this subject, see page 87 of this issue.

Newly Elected Officers
American Municipal Association

President: Fletcher Bowron, Mayor, Los Angeles, Calif.

Vice-President: Harold F. Alderfer, Director, Pennsylvania Bureau of Municipal Affairs, and Secretary, Pennsylvania Association of Boroughs.

Members of the Board of Trustees for the coming year:

deLesseps S. Morrison, Mayor, New Orleans, La.

John Huss, Secretary, Michigan Municipal League, Ann Arbor, Mich.

Quigg Newton, Mayor, Denver, Colo.

Frederick N. MacMillan, Secretary, Wisconsin Municipal League.

F. C. Owens, Mayor, Columbia, S. C.

Morgan Strong, Executive Director, New York State Conference of Mayors, Albany, N. Y.

National Association of Municipal Legislators

President: Edwin L. Carty, Mayor, Oxnard, Calif.

First Vice-president: Frank H. Beckstrom, Councilman, Kansas City, Mo.

Second Vice-president: F. C. Owens, Mayor, Columbia, S. C.

Third Vice-president: J. H. Patrick Glynn, City Commissioner, Pontiac, Mich.

The secretariat of the new organization will be at the offices of the American Municipal Association, 1313 E. 60th St., Chicago 37, Ill.

Housing Hearings

The Joint Congressional Committee on Housing, which held meetings in New Orleans during the conference, demonstrated a willingness to listen to the statements of municipal officials about their housing needs and the aid required to solve slum clearance and housing problems. Several of the Congressional representatives voiced resentment over the reported obstructionist tactics of the real estate lobby against federal housing legislation. Senator Joseph R. McCarthy of Wisconsin made a statement that several municipal officials looked upon as encouraging. He declared that some form of federal help will be required to municipalities if the "middle-lower-income groups" are to be decently housed during the housing emergency of the next 8 or 10 years.

Intergovernmental Relations

During the conference sessions varying points of view on federal-state-municipal relations were presented by Lawrence E. Walsh, Assistant Counsel to Governor Thomas E. Dewey of New York, Mayor F. Kenneth Dempsey of South Bend, Ind., and Senator Edward Martin of Pennsylvania. Mr. Walsh described the New York State program to increase the stability of municipal finances and the emphasis in that state on the importance of strong local government as a means of checking centralization and preserving citizen control over government.

Mayor Dempsey disagreed with the philosophy of the report on *State-Local*

Relations published last year by the Council of State Governments. Warning against state bureaucracy, he declared that the home-rule needs of local government were not sufficiently recognized. Senator Martin stressed the importance of frequent meetings of representatives of the three levels of government as an aid in coordinating tax programs. He urged that local governments be given an adequate tax base to perform their functions properly, and declared that the Federal Government should assist municipalities by loaning money for the construction of self-liquidating projects.

As a concrete measure to help solve intergovernmental conflicts, Dr. Charles E. Merriam, distinguished political scientist of the University of Chicago, suggested at the conference that a national commission should be constituted to deal with the functions of local self-government in the United States in relation to state and national government. Such a commission should consider the best forms for exercising functions of government as well as the appropriate division of finances for such purposes, he said. This suggestion was incorporated as one of the AMA resolutions.

Planning and Public Works

Planning and public works construction problems were also in the forefront. Maj. Gen. Philip B. Fleming, Federal Works Administrator, told the delegates that the shelf of completed works plans under the advance planning program was vanishing rapidly. He estimated that there was a backlog of $75,000,000,000 of needed new state and local public construction held over from the depression and war years. In contrast to this, he said that there was only a total of $2,200,000,000 of state and local projects for which plans were completed, and that during the first eight months of this year, contracts were let for $1,400,000,000 of such projects.

A panel on "Combatting Urban Decentralization" brought forth a statement by Mayor William T. Devin of Seattle that "proper, adequate, and executed planning of cities is the only true and sound answer" to keep people from moving into the suburbs to escape taxes. Charges to suburban areas for municipal services and the adequacy of subdivision and zoning controls were also discussed. Walter H. Blucher, executive director of the American Society of Planning Officials, commented on the fundamental need for some control to prevent the unnecessary subdivision of land, and also spoke of the weaknesses of existing zoning practices and zoning ordinance enforcement.

Promoting good public relations and stimulating citizen interest in municipal affairs was a theme raised by a number of speakers on the conference program. Mayor Harley E. Knox, of San Diego, Calif., presented a number of how-to-do-it ideas on the subject. Mayor Quigg Newton of Denver voiced some doubts as to whether citizen interest in local government can be maintained over any long period of time without a vigorous public relations program. He urged careful thought to the matter of charter revision as a prime instrument for preventing the return of political machine government. Mayor deLesseps S. Morrison of New Orleans described the effectiveness of that city's full-time public relations department in maintaining citizen interest, and also discussed the foreign trade development program of the city and its dependence on good public relations.

State League officials gave special emphasis in their panel discussions to the importance of carefully planned state league legislative and operating programs as a major device for securing favorable legislation pertaining to municipalities.

Canadian Federation Outlines Housing Program

Mayor Ray T. Forbes of Fredericton, N. B., new president of the Federation

AT THE request of the Rt. Hon. C. D. Howe, Canadian Minister of Reconstruction, the Canadian Federation of Mayors and Municipalities has submitted to its Federal Government a proposed outline for national low-rent housing legislation. The outline, prepared by J. O. Asselin, chairman of the executive committee of the City of Montreal, and George S. Mooney, consultant to the Federation, makes clear the responsibility of the Federal Government for initiating an adequate housing program.

The statement provides for federal loans to both privately sponsored, limited-dividend projects and to municipal-, provincial-, or federal-sponsored projects. The program also requests annual rental subsidies to be wholly provided by the Federal Government to maintain the character and purpose of low-rent housing projects.

The conclusion declares:

In short, we believe that the provision of adequate shelter accommodation for low-income families throughout Canada is a nation-wide social objective which transcends mere governmental responsibility. It is a long-term undertaking which should commend itself to every thoughtful citizen. Perhaps more than any other single social goal, it is the tangible expression of our faith that democracy in action is superior to any other form of community or state organization.

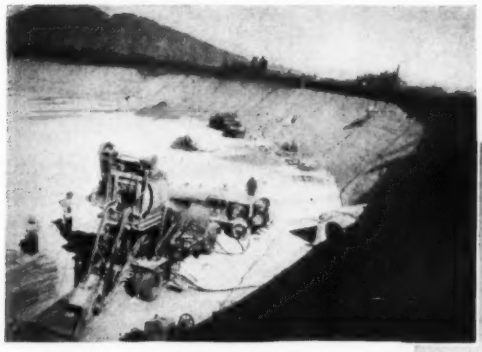
Stricter Control Of Sleeping Pills

NEW and stricter regulations governing the sale, distribution, and dispensing of barbiturates (sleeping pills) went into effect in New York City last month after an increasing number of deaths and hospitalizations from overdosages of the drugs.

Despite the enactment of a state law governing barbiturates in 1946, the number of deaths involving such drugs had continued to increase in the city. In 1946 there were 183 such deaths, and indications are that in 1947 the rate will be even higher. The main cause of the deaths and hospitalizations attributed to overdosages, according to the city Health Department, is that the general public does not realize how dangerous sleeping pills are unless the physician's directions are followed carefully.

Twenty drug inspectors of the city Health Department will enforce the new city barbiturates law. These inspectors will investigate every case of barbiturate poisoning to ascertain the source of supply and to stop illegal distribution. The new law requires that barbiturates must be sold on prescription only, and that no prescription may be refilled unless the doctor orders such refilling in writing on the prescription and specifies the number of times it may be refilled and the intervals of refilling.

The law also provides for the exact labeling of prescriptions and packages in which the drug is dispensed, and states that manufacturers, wholesalers, and pharmacists must keep accurate records of the purchase and sale of barbiturates. Violation is a misdemeanor and punishable, on conviction, by a fine of not more than $500 or imprisonment for not more than one year, or both.



Left: A construction shot of work on the new 20-mg reservoir for Phoenix. Below: Gunite operations under way.

Phoenix Strengthens Its Supply

AN ADEQUATE water supply in an arid country naturally has to be a problem. It is a problem that is not simplified particularly when the supply is for a city of 120,000 that uses this water at peak daily rates running as high as 350 gallons per capita, and peak hourly rates of 475 gallons per capita per day. The way a city meets a situation like this is bound to be interesting.

The city, in this case, is Phoenix, Ariz., at one time little more than an important vacation center, now a city with growing industries. The supply tapped is the Verde River, approximately 30 miles to the northeast.

Infiltration Gallery Used Originally

In the past, Phoenix drew water by means of a 4,000-foot infiltration gallery; took advantage, in effect, of a large natural slow sand filter replenished as the Verde flowed down through its bed of bank gravel. In good conditions, this 4,000-foot line would produce 30 million gallons of water per day.

But all did not work together for the good of the Phoenix water supply. In 1940 a dam went up, the big Bartless Reservoir, a part of the Salt River Project. This reservoir was constructed so that it would sluice out sediment that settles in the reservoir, clearing its own basin. But this silt, as it moved onto the recharge area, clogged the gravel beds and cut their infiltrating capacity. At times, this reduced the yield of the collection system to a low of 12 mgd.

However, Phoenix has a source of water other than the Verde River. This supply connects to Phoenix through 20 miles of 48- and 45-inch reinforced concrete pipe and discharges into three reservoirs having a combined capacity of 35 million gallons, or roughly a summer day's supply.

In addition, Phoneix has other sources of supply, although not of such high quality. Six wells located along the pipe lines reinforce the Verde River supply when the demand becomes too great. Still, Phoenix has more people who want water than she has water to supply. Several thousand people who reside in the "suburbs" would be most pleased at the prospect of city water, but cannot get it. Demands on the system run approximately as follows:

Population served (120,000; 24,000 connections)	*Gallons per cap per day*
Daily minimum—January	108
Daily maximum—July	350
Weekly maximum—July	308
Monthly maximum—July	283
Maximum hourly rate—July; 7:30 p.m.	475
Minimum hourly rate on maximum day; 5:00 a.m.	167
Average day	183

During the peak hour, pressures at weak points in the water system dropped as low as 20 pounds per square inch, or half the Fire Underwriters' minimum.

Phoenix has a few other sources available. From the Verde River she has drawn no more than a maximum of 20,000 acre-feet, but an additional 20,000 acre-feet can be made available by storage on the Horseshoe Dam, another of the Salt River Valley projects. This dam was built without gates. The Salt River Valley Water Users Association has agreed to supply these gates out of a fund of $800,000 that Phoenix has furnished. These gates will impound approximately 75,600 acre-feet of storage and will conserve nearly 25,000 acre-feet per year of flood waters, allowing for evaporation.

This surface supply, however, calls for pumps and a filter plant. The city is moving to make such an improvement. A filter plant with a capacity of 30 mgd is on the books for construction at Phoenix. The filtered water will be added to the present Verde supply at such times as the demand exceeds the capacity of the present collection system. At least nine months out of each year the present collection system will continue to supply the entire demand. For three months each year, the filter plant will supplement the present supply to meet an estimated maximum-week requirement of 46 mgd.

The filter plant is located below another proposed reservoir planned by the Bureau of Reclamation. When this reservoir is constructed, it will only be necessary for the city to change the method of supplying water to the filter plant. The proposed reservoir, by its location, will flood out the Verde River surface supply.

The present 48- and 45-inch reinforced concrete pipeline from the Verde River to the city reservoirs will continue to carry all water developed on the Verde River. Its present capacity of 30 mgd daily will be increased to 46 mgd by adding booster pumps to the line. These booster pumps, a pair of Byron Jackson units, will start automatically at 600 rpm. As the demand increases, the speeds of 720 rpm and 900 rpm will be utilized to deliver a total of 46 mgd against a total dynamic head of 109 feet. The pumps will be operated in parallel at all times.

To help keep a reserve supply on hand, an additional reservoir will also be constructed to store an added 20 million gallons. A new 48-inch pipeline, which will allow a peak of 79 mgd if necessary, will also be constructed to supplement the present supply line. The distribution network also will be reinforced to care for the additional water needs.

The City Tells Its Story–IX

By HENRY DAVIS NADIG, *Director of Public Relations, New York Regional Plan Association*

You can use local radio to do a real municipal public relations job

MAYOR ROBERT H. SAUNDERS of Toronto comes the closest that I know of to the late Fiorello H. LaGuardia of New York City in carrying to his constituents by radio an informative and invigorating weekly report on municipal affairs. In fact, the New York mayor had a hand in launching the Saunders Sunday programs.

Bob Saunders has his rivals, however, among the many mayors of the United States who have taken to radio as a regular method of direct reporting to their fellow citizens. You will recall mention of Mayor George W. Johnson of Duluth and Mayor Earl Riley of Portland, Ore., in the September column—and there are others, including Mayor John L. Bohn of Milwaukee.

It is to Milwaukee that I would like to refer in particular at this point in stressing for you the importance of radio as a powerful MPR tool available (in most instances for the asking) to the vast number of our cities. Not only can your city's No. 1 MPR man (the mayor) usually get radio time for regular broadcasts; there are other types of official municipal programs readily produced and acceptable to radio program directors if well handled.

How is Milwaukee, for example, telling its story by radio? From William L. Slayton, Municipal Reference Librarian in Milwaukee, I have the history of the steps taken up to the present—which finds Milwaukee with an official Radio Committee supervising three recently inaugurated municipal radio programs.

The City's Story by Radio

These are (1) a five-minute daily newscast of city hall news; (2) a 15-minute biweekly discussion by aldermen of an important city issue, and (3) a 27-minute biweekly explanation of city functions. The mayor's weekly 15-minute broadcast and a children's program by the library are not directly supervised by the Radio Committee.

Although Milwaukee has not lacked experience in municipal radio programs, Mr. Slayton writes, the three programs cited are the first to be sponsored by the Common Council under its own direction. They represent a real, conscious effort to bring the citizens closer to their local government. How successful this effort will be can be told some months hence.

Milwaukee's MPR radio history includes two earlier programs, one by the health department and another by the Government Service League, an association of local government employes. The

first dramatized the department's activities and services, the second explained city functions. Both had good audiences. The first was discontinued when the script writer left the department and no one was found to take her place; the second was discontinued several years ago.

Mr. Slayton says that the idea of the three new programs came about "quite unexpectedly" to fill the void left by the discontinued programs. "A local firm," he writes, "approached a member of the Council and offered to sponsor radio time for the city, to be used in any way the city saw fit. This offer caused two local stations to offer the city free time for a radio show. In addition, two aldermen introduced a resolution asking that the Municipal Reference Librarian make a study on the feasibility of the city's either owning a radio station of its own or purchasing time on local stations for municipal programs. The offers of the stations were held up until this report was made."

The Situation Studied

Mr. Slayton proceeded to make the study, querying all six local radio stations on the question of free time and the type of programs preferred. He also queried other cities on the use made of radio. The following bears out the point that you can get radio time for municipal public relations programs if you ask for it and are willing to produce the shows in good style.

"All local stations were quite cooperative and offered the city as much time as it needed," Mr. Slayton writes. "Differing facilities at the stations meant that some could not offer services as great as the others, but all were willing and many eager to have municipal programs. Each station was quite definite, however, in saying that the shows must be worth while and have listener appeal. They were all of the opinion that the city should have a script writer-program director handle the shows."

Mr. Slayton then made his report to the Common Council, which took no action on radio station ownership, but expressed interest enough in starting municipal programs to create a Radio Committee of four aldermen, two citizens, and the Deputy City Comptroller (the budget examiner), with the Municipal Reference Librarian as secretary.

The Radio Committee went to work, holding several meetings, talking with radio station representatives, drawing up a plan of programs and (because the committee had no funds) solving the script-writer problem by asking the Library to provide part-time services of the Chief of Publications and Exhibits, with the understanding he would be given clerical help.

The Council Acts

Having decided on three programs, the Committee went to the Council with its report. "The Council liked the idea of radio programs, for they felt that their views were not always accurately or fully reported in the press," Mr.

Slayton writes. "They felt that this would give them an opportunity to take their case directly to the people without depending on the press for coverage."

The Common Council adopted the report, gave the Committee the function of supervising all radio shows, choosing the participants and selecting the issues to be discussed. The Council also gave the Committee authority to put on any additional program when the Committee held it advisable.

News and Views

"City Hall News" was the first program to hit the air, over WEMP. A five-minute report of important city events, it includes announcements of meetings, issues to be discussed, and other city government items. Mr. Slayton prepares this broadcast, which is put on as part of a 15-minute news period at 6.15 p.m., Monday through Friday. City Hall news thus gets a real break on the air, since adequate coverage is assured. Already one effect of the five-minute official newscast has been to step up the amount of time given local news on other radio stations in Milwaukee.

"Your Common Council" goes on biweekly over WISN and finds aldermen giving their views on a current city issue in a 15-minute round-table discussion paced by a moderator, Norman Gill, executive director of the Citizens Governmental Research Bureau of Milwaukee. While all controversial questions are required to have spokesmen on each side, Mr. Slayton reports that four aldermen on the first program proved too many for adequate presentation of individual viewpoints and the participants are now limited to a pair besides the moderator.

Take your cue from this if you're contemplating production of the popular forum type of program. Even in a half-hour show, four participants will demand the utmost of the very best moderator—if he is to keep things moving, give each speaker his share of words without drag or loss of control, and create a satisfactory listener reaction. Yes, four is out for 15 minutes; but two should work out nicely in that period.

"Mr. Milwaukee"

In the third show (27 minutes biweekly over WTMJ on alternate Saturdays to the WISN program), Mr. Milwaukee interviews aldermen and other public officials on various phases of municipal government. Requiring a complete script, the show opens with a three-minute review by the mayor of the city's activities of the past two weeks. Mr. Milwaukee follows up in a chat with two aldermen or other officials on an important question (two sides represented) before the Council or one of its committees. Discussion of his activity with a department head concludes the program.

Milwaukee's Radio Committee seems to have been fortunate in finding the right kind of person to prepare and participate in this broadcast. It is a type of program that for its success and popularity depends upon an individual's quality of treatment, his initiative, imagination and intellect, and his ability to make vivid and dramatic for his listeners the many ways in which city government is human and honest.

The character of this program is enhanced, its tone is set by a recorded ringing of Milwaukee's City Hall Tower bell (now used only to mark the start of the official July Fourth celebration) at the opening and closing of the show. The inscription on the bell is read at the start of the program, right after the tolling, adding further significance:

> "When I toll the hour of day
> From this grand and lofty steeple
> Deem it a reminder, pray,
> To be honest with the people."

These three programs, together with the other two municipal shows not directly handled by the Radio Committee, form a well-rounded MPR use of radio. The committee will undoubtedly develop others, including some single shows and short series for special purposes. But, with all due credit and place to each, Mr. Milwaukee may well top them all.

A professional who has donated his services to the city for the remainder of the year, Mr. Milwaukee is a very friendly, warm character, according to Mr. Slayton, who adds that the radio station calls his scripts "very good." I venture that if his talent measures up to his opportunity in this program, Mr. Milwaukee will continue to be on the air after the first of the year for the City of Milwaukee!

What Is Your MPR Score?

This department of *The American City* desires to determine as authentically and thoroughly as possible the range and character of municipal public relations carried on in cities throughout the country.

What is your MPR score? What are your public relations activities? By what means are you trying to tell your city's story? What tools of municipal public relations are you using?

Twelve specific questions on municipal public relations are asked in a questionnaire just sent by *The American City* magazine to more than 400 cities.

The results of this poll will be tabulated, analyzed, and then reported in this department after returns have been received.

Whatever you are doing in municipal public relations counts. So—make your city count! Return your questionaire promptly! And if you have not received one, let us know!

National Municipal League Studies State Constitutions

PRINCIPAL attention during the annual national conference on government of the National Municipal League, attended by approximately 750 in Nashville, Tenn., November 12 to 14, was focused on the timely subject of state constitutional revision. In 15 states and in Hawaii, constitutional revision is now an active issue.

Two other especially lively discussions were devoted to "City-County Consolidation" and "Where Can Cities Get the Money?" The session on consolidation was chaired by Roscoe C. Martin, University of Alabama, and it is expected that the papers presented at this meeting will be reprinted by the League because of the steadily increasing interest in the subject and its possibilities for solving many metropolitan area problems. The session on city finances, presided over by Thomas H. Reed, municipal consultant, reached unanimous accord on the fact that cities do need greater taxing powers, but no general agreement was achieved on what specific steps should be taken toward this end.

Charles Edison, former governor of New Jersey, was re-elected president of the League. George H. Gallup and J. W. Clise were re-elected vice-presidents. Added to the list of honorary vice-presidents were James L. Beebe, Los Angeles, and Frederick L. Bird, Arnold Frye, and John S. Linen, all of New York.

Added to the membership list of the Council are William Anderson, Minnesota; R. E. Blake, St. Louis, Mo.; William Collins, Yonkers, N. Y.; Rev. Edward Dowling, S.J., St. Louis, Mo.; J. W. Esterline, Indianapolis, Ind.; B. H. Faulkner, Montclair, N. J.; Clarence Francis, Bronxville, N. Y.; Lloyd E. Graybiel, San Francisco, Calif.; Harrison S. Hires, Berwyn, Pa.; Robert W. Johnson, New Brunswick, N. J.; Mark S. Matthews, Greenwich, Conn.; William J. Pape, Waterbury, Conn.; and Harry Schacter, Louisville, Ky.

A Cleaner City Through Central Heating

ERNEST R. Brundage, Rochester, N. Y., city smoke abatement engineer, measured the amount of soot fall for Rochester during the fall of 1945 and obtained a set of figures which showed an average of 23 tons per square mile per month. It represents considerably less than the reading received in 1937, which was 32 tons per month, when industrial activity was comparable to—or perhaps less than—1945.

One outstanding factor in this improvement is the increase in steam sales of Rochester Gas and Electric Corporation, with the resulting elimination of private boiler plants and chimneys.

Many chimneys in downtown Rochester are "duds," and many buildings have no chimneys. Various large buildings are now receiving steam for heating and process purposes through the underground steam lines of the private utility, which has distributed in this area some two and one quarter billion pounds of clean steam heat each heating season. In a further endeavor to make Rochester an even cleaner city, the company has made major additions to its system.

Background

Central steam in Rochester has an interesting historical background. Half a century ago a laundry and cleaning company asked Rochester Gas and Electric Corporation to supply steam for its heating and processing requirements from the nearby generating station. Since the station had excess steam, it seemed reasonable that it would cost less to pipe it to the laundry than for the laundry to generate it. Moreover, the utility foresaw in steam sales the opportunity of selling electricity for power and lighting to companies depending on water power, which was becoming increasingly inadequate.

So the utility went into the steam business. As demands for steam sales grew, distribution lines from the main generating plant (Station 3) were extended. Commercial and industrial buildings in the area saw the many advantages of purchased steam, and eventually most of them were connected to the lines.

In the meantime, industrial plants and commercial buildings in other areas in the city requested that the utility also supply their steam needs. At that time, it was felt that they were too far from the main generating plant (Station 3) to pipe steam from that source. Today's modern steam distribution systems had not yet been developed, and four plants were set up or acquired in those areas for the sole purpose of generating steam to sell to nearby customers. Today, the utility sells about two and one-half billion pounds of steam annually to 363 customers through 21½ miles of conduit. Some of these have more than one plant or building, which accounts for the fact that customer meters total 422.

Customer Classification

The following tables show the classification of customers, and how Rochester Gas and Electric Corporation distributes steam to them:

CUSTOMERS CLASSIFIED AS TO SIZE	
Under 1,000,000 pounds per year...	159
1,000,000 to 8,000,000 pounds per year	160
Over 8,000,000 pounds per year....	44
Total	363

DISTRIBUTION DATA	
Conduit — (in lineal feet)	
Mains	79,352
Service lines	18,754
Total steam lines	98,106
Total return lines	15,349
Total conduit .....113,455 (21½ miles)	
Total sq. ft. pipe area	177,707

The peak load was 852,000 pounds per hour in 1945. Pressure in steam mains was 250 psi, except for the tie-line from Station 3 to the de-superheater station in Station 8 system, where the pressure is 650 psi. Pressure is reduced to 100 psi for customers' high-pressure steam, and to 15 psi for customers' low-pressure steam (5 psi delivered guaranteed).

Station 8 is located on Lawn St. across from the Gas and Electric Building. It is designed primarily for the generation of steam for heating and of high-pressure steam for process use. Electricity is generated as a by-product.

Station 8 supplies steam for the main business district of Rochester. All together there are 150 steam customers connected to this one portion of the steam-distribution system.

To meet increased steam demands of the district beyond the capacity of Station 8 boilers, the new tie-line from Station 3, which will add up to 200,000 lbs. of steam per hour to Station 8 distribution lines, was designed and erected by Blaw-Knox Construction Company. With this new capacity, Station 8 lines will be extended to take over the steam load of the Litchfield St. district, now served by Station 35.

Station 9 steam plant, located in the large industrial district on the western edge of Rochester, supplies gas, electric, and steam service. It is on the main lines of the New York Central and the Baltimore & Ohio railroads in the Lincoln Park district.

Station 11, located on South Goodman St., provides steam service to various manufacturing plants.

Case Histories

The benefits gained from purchased steam are convincingly demonstrated in the experience of the companies on Rochester Gas and Electric's customer lists. The following examples are typical:

Bausch & Lomb Optical Company—The huge industrial plant of Bausch & Lomb Optical Company is located on the Genesee River, across from the main generating plant, Station 3, a short distance downstream. R.G.&E. has been selling steam and electricity to the company since 1910.

Eastman Kodak Company—The Eastman Kodak Company uses purchased steam exclusively for its nineteen-story office building and for all of its factory buildings in this group, as well as for its building at 50 Main St. R.G.&E. service to Eastman started in 1912.

Sibley, Lindsay & Curr Company—This department store occupies a solid block bounded by Clinton Ave., Main St., North St., and Franklin St. In proportion to the size of Rochester, it is the country's largest retail institution.

The store and associated buildings have 23 acres of floor space and an all-day population of several thousand people. Large amounts of electric power are used for lighting, elevators and escalator service, conveyors, refrigeration, ventilation, and operation of pumps, conveyors, and other equipment. Steam is used in great quantity for building heating, water heating, cooking, and laundry work. Gas is used for the operation of restaurant and bakery equipment.

Until 1937, all power and steam for the store were supplied from the store's own power plant on Franklin St. In that year increasing power requirements for modern store lighting made it necessary either to install additional generating equipment or to purchase part of the power. While the Sibley store

Left: Installation of insulated steam pipe puts this central heating on an economical basis. Above: Rochester's business district enjoys a clean and smoke-free atmosphere by using central heating.

had been expanding, the Rochester Gas and Electric Corporation had been developing its system in step with the growing needs of the community. It was able to offer electric service of the desired quality, and the store decided to purchase part of its power. The store's power plant supplied direct current and the principal supply from the utility system was alternating current. This change in character of service in part of the store required extensive changes in the store wiring. However, these changes were made without interference with store operation and purchase of power for general store lighting began in November 1937.

As further modernization took place in the store, the increasing load caused the situation of 1937 to be repeated, and in 1941 the store management decided to purchase all its power and steam from the Gas & Electric Corporation and to remove the power plant. The necessary work was carried out in the winter of 1941 and 1942. In May 1942, the private power plant was shut down for good and later dismantled and removed. The space is now being used effectively as a parking lot for store customers.

Purchased Power Advantages

The change to purchased power and steam service has freed the store management from the problem of power-plant operation. This eliminates a source of noise and dirt in the neighborhood and releases valuable space for further uses. These advantages are clear gains, as the dollar cost of purchased service compares favorably with the cost of service from the former plant.

The Pfaudler Company—The Pfaudler Company is the world's largest manufacturer of glass-lined tanks. Its main plant is located in the Lincoln Park district of Rochester. When, in 1937, this company built a new plant doubling its manufacturing space, its management decided to purchase steam from R.G.&E. for heating. The building is 650 feet long, 230 feet wide and 50 feet high. Steam is supplied from R.G.&E.'s Lincoln Park plant (Station 9) through an extension of the distribution line which, prior to 1937, terminated at the General Railway Signal Company plant.

Purchased steam has been used for heating the building since it was built, as well as the remainder of the plant. The company is eminently satisfied with this service, which saved them the cost of an addition to the power plant and boiler equipment and has provided dependable, economical, and clean heat ever since.

Hotel Seneca—In addition to its heating requirements, a hotel uses large amounts of steam for water heating and in its laundry and kitchen. The steam source must be completely dependable and able to deliver peak loads quickly, to bring comfort to hotel guests on cold mornings. Since 1940, Hotel Seneca has purchased most of its steam from R.G.&E. supplied by the utility's Lawn St. Plant (Station 8). Purchased steam has contributed greatly to the efficient, economical operation of the hotel.

The installation of the steam service line to the Seneca Hotel is of interest from an engineering viewpoint.

In 1940, a contract was signed for furnishing steam to the Seneca Hotel. This service, comprising a 160-foot run of 4-inch extra-heavy pipe, had to be installed between Saturday night and Monday morning. Most of the line ran directly up to Downs St., which is very narrow and carries traffic one way, and the city would allow it to be blocked off for only this limited time.

The recommended solution was the use of Ric-wil Insulated Pipe Units, requiring very little field labor and no hardening of portland cement joints before backfilling.

Since this seemed to be the best system to meet the requirement of "speed on the job," a carefully prepared schedule was worked out by the engineers of the R.G.&E. Sunday, April 14, 1940, was set for the installation day.

Breaking the pavement and trenching work started Saturday afternoon, and all of the line which ran thru Downs St. was completely installed, including back-filling and repaving, by Sunday night. The working crew assigned to this service connection was on the job Saturday from noon to 8:00 P.M. and Sunday from 8:00 A.M. to 10:30 P.M.

The accomplishment of this task was quite remarkable, since all materials had to be handled from a warehouse on Hollenbeck St. and trucked over two miles to the site. Also all refuse and debris had to be removed promptly to avoid traffic obstruction.

Heating is one of the most important services in any building. It should be adequate at all times, regardless of weather conditions, and it should be obtained at the minimum expense consistent with high quality.

The fact that many of the modern and important buildings in this city are using Rochester Gas & Electric Corporation's steam service for heating demonstrates that this service fulfills these requirements.

"More Than Planting Pansies"

Landscape design as it affects the beautification and utility of recreational and park facilities

By RALPH D. CORNELL, F.A.S.L.A.
Consulting Landscape Architect
Los Angeles, Calif.

THIS is a strategic time at which to consider how landscape design may affect the beautification and utility of recreation and park facilities, since it is a time when we seem to be moving toward merging of park and recreation departments under one head and management.

The backgrounds of these two departmental activities, from the standpoint of their physical make-up, are quite different, even though both of them have striven for the common goal of providing recreation and relief from tensions of urban life. Their beginnings were predicated upon different conditions of life and different theses of urban need. The purely landscape park goes back into the centuries for its origin, when such areas were developed as a luxury for the gentlefolk of means, to a time when the common man had no voice and little consideration in the scheme of things other than to serve those in more fortunate circumstances. The recreation or play area, as we think of it today, is quite recent in its concept and is designed primarily for the common man, for the underprivileged of the urban areas: those who are unable, otherwise, to escape the harshness and artificialities of city life—though it excludes no one from its facilities.

And so, without dwelling or expanding upon the beginnings and evolution of these two types of parks, both of which are intended for recreation purposes, it appears that both have developed quite logically from the original thinking that put them into being. One is not surprised that the landscape park grew in a manner to express naturalistic effects, on the one hand, or the more artificial arrangements of manmade, formal gardens on the other. In either case the emphasis was on the beauty of things to be seen and the passive recreation that comes from being in pleasant surroundings.

By contrast to this, the early playground plans were so self-conscious in their efforts to provide active play space that no consideration, at all, was given to ornamental planting or landscape values. A slab of pavement and a line of fence, to state the extreme case, became a playground. It provided opportunity for active, supervised recreation but it took no advantage of the other opportunities that might be present for an attractive and pleasing plan that not only would function well but also would look well.

For a Happy Marriage of Parks and Playgrounds

Now, with this departmental consolidation that already has taken place in a number of instances within our California cities, we have come to the marriage of the parks and the playgrounds, for better or for worse. We hope that it will lead to domestic harmony and that the "young couples" will live happily ever after in all cases. But, as in all ventures of matrimony or consolidation, it is very important that each party to the bargain feel due and proper respect for the qualifications and abilities of his partner. Neither should over-rule or absorb the other. Mutual appreciation and consideration are necessary if the highest potential of the combination is to be realized.

A good friend, not long ago, told me that it looked to him as if active recreation was the theme of the day; if the "kids" broke down the bushes in the park or trampled the flower beds there was nothing to do about it. Robust recreation reigns supreme and all else should give way to it, regardless of destruction or appearances. This attitude probably is an exaggerated one. Certainly it is not necessary to destroy all order and beauty that youth may blow off its safety valve. And this is where planning in general, and landscape planning in particular, enter the story.

My personal feeling is that all planning should be functional in its basic approach to the problem. The planner is asked to plan land for human use, generally for a very specific purpose. If the planner is a landscape architect he undertakes to plan the land for both human use and enjoyment. The factors of beauty play a large part in the human enjoyment that associates with any use of land. The fact that thought and consideration are given to the landscape values need not detract one whit from the use values that may be the first reason for the land development. As we come to maturity in our culture and in our planning we learn to use all of the opportunities that may be present, in any planning problem, for developing land in a manner to make it both functional in its use and attractive in its appearance.

Most types of active recreation require unobstructed, open spaces of various shapes and sizes. Certain types of such outdoor activity require very large areas, within which there may not be trees or other obstructions. These are functional requirements that must be met. These spaces generally are very definite and hard in their outlines and, in themselves, cannot be made very beautiful. However, if the different play units may be spaced in a manner to permit screening, enclosing, or boundary plantings, it may be possible to give them very attractive settings and so break up the monotony of large play expanses that the entire playground site becomes quite attractive. Certainly it may be screened from adjacent streets and buildings so that its appearance is pleasing from outside and so that such outside influences do not disturb playground patrons themselves.

Functional Requirements That Must Be Met

The functional requirement of recreation facilities is that they provide adequate and proper play space in the proper relationship, between units, from the standpoint of administration and supervision. The landscape requirement is that all of this be done in a manner that is attractive and that takes advantage of every opportunity to combine beauty with the functional processes.

Proper planning can prevent many of the abuses that usually occur with heavy use of any park area. Such abuses would include the trampling out of lawns and shrubbery plantings and other types of use-mutilation or destruction of the decorative features. In struggling with such problems we all would agree that the human animal is the most difficult of all to control and that, sometimes, it seems to be utterly impossible to prevent people from what seems to be wanton destruction. But, within lim-

its of logic and good planning, it is possible to plan parks in such manner that the wear and tear of use is reduced to a minimum. If the traffic and circulation systems of parks are laid out properly to accommodate the traffic and circulation of the park, it will go a long way toward eliminating abuses of use, bare spots in the lawns, and trampled shrubbery. Many times the trouble is with the plan rather than with the idea that parks and playgrounds should have attractive planting. And this brings us right back to the fact that all planning should be functional in its basic approach. . . .

Landscape design is much interested in the appearance and beauty of any development that it may undertake, but its responsibilities and capacities are much more than the planting of pansies. Landscape design attempts to coordinate the many factors that compose the picture into an efficient and pleasing composition that not only will work in a practical way but will be pleasing and attractive to behold.

From a paper presented at the 1947 conference of the Recreation and Park Officials Department, League of California Cities.

Private and Public Cooperation Needed for Urban Rebuilding

By WILLIAM ZECKENDORF
President, Webb and Knapp, Inc.
New York, N. Y.

THE CRITICAL STAGE in the life of the nation's great cities is at hand. Today our big urban centers are largely obsolete. Unless they can be made to reflect and express the fundamental needs of their citizenry, of trade, of commerce, and of industry, they will wither and die.

Therefore the question, *Who decides what's to be built?* is the most timely and important question you could ask. But to get to the core and essence of this question, I feel I must raise a larger, more general, and more basic issue that now looms before every important community in the land. The issue forced upon me is this: *What is the role, what is the future of private enterprise in urban redevelopment?*

Large-scale urban redevelopment, in my opinion, cannot be accomplished by municipalities alone. Private enterprise alone cannot measure up to this enormous task. Each has powers and resources denied the other. Each needs the other to accomplish the common end.

Private Enterprise and The Public Good

But for some strange reason, private enterprise in respect to urban redevelopment seems suspect. A great cry goes up that the developer, the private organization with its plans and its dream, is out to make a profit. The developer is, of course, out to make a profit. But he may at the same time be ardently seeking the public good. If it be impossible for a reasonable and appropriate private profit to be combined with a sound and lasting public good, then private enterprise has no role and no future in urban redevelopment, and cities must struggle alone as best they can. If this be impossible, are we not saying indeed that the American system of personal initiative and risk is now outworn?

The obvious fact is, however, that private enterprise can achieve a reasonable profit and, in addition, make a great and lasting contribution. It can make a profit for its municipality through a rise in values and consequently in tax revenues; it can create a development in the public interest; and, lastly, it can leave something inspiring where before there was only ugliness and blight. Historically speaking, we have only to recall that private corporations known as railroad companies opened up the entire American Empire, inspired to a high degree by the profit motives of railroad investors.

Over-all city planning is most properly a function of municipal government. But in urban redevelopment, once the over-all concept is in hand, the execution and development from the general to the specific should be carried out by private enterprise. There are, of course, exceptions to this principle—such as subsidized low-rent housing, subsidized parking facilities, and many other necessary functions that cannot by their very nature be handled by private enterprise. But the principle is more important than the exceptions. In addition, of course, those responsible for over-all city planning must be objective-thinking, broad-gaged, active men, receptive of ideas from outside their group and free of the malady of pride of authorship — or the city stagnates and dies.

Socially and politically speaking, the heart of the problem of urban redevelopment is that of assembling land. The principle of arbitrarily taking away a man's property and selling it to another is repugnant to the basic thinking to which we Americans are accustomed. The improper exercise of the "police power" can lead to real abuses. Conversely, we can reach the point of absurdity in respecting the so-called rights of private property in determining when and at what price a single owner may arbitrarily hold on to that property. We can respect an owner's right to the point of encouraging a premium on holdouts who demand a price for a small section in a carefully planned over-all development that makes it impossible to go ahead and build. Support by municipal authority of this brand of thinking and of greedy, vested interests holds up progress at the expense of the whole community. The only answer lies in the judicious use of the power of eminent domain, applied only after all fair and proper means for negotiation have failed.

Directing Community Energies

It is the job of the planner or the developer to foresee what is needed so that the energies of the community may be rightly directed. The community should create those projects which properly fall within its scope, and private enterprise, encouraged by the community, should build those projects which most properly fall to its sphere. The necessity in urban redevelopment is to distinguish between wise and objective over-all planning and the gradual or rapid strengthening of a narrow, selfish, bureaucratic control over the field. One fact above all is obvious: if cities are to be rebuilt on any scale, a method must be worked out that will permit private capital to venture profitably into reclamation and rebuilding.

Excerpts from an address before the annual convention of the New York State Association of Architects in New York, October 24.

Local Government Is Big Business—and Should Function Accordingly

COMPENSATIONS of key men in local government should be at least equal to those paid by private enterprise and fully commensurate with the responsibilities borne by them, Bayard H. Faulkner, vice-president-secretary of the Seaboard Oil Company, told the New Jersey State League of Municipalities at its annual convention in Atlantic City last month.

Speaking as a member of the governing body of Montclair, N. J., on which he has served as a commissioner for the last ten years, Mr. Faulkner urged that local government, as big business, should be equipped with the tools of big business; and he suggested the following as a check list of some of the more obvious techniques and practices which have gained acceptance in up-to-date municipalities:

How Up-to-Date Is Your City?

How do you clean your streets of leaves or snow? By the strong-arm method or by machines?

Is your Police Department equipped with two-way radio?

Are you using parking meters for traffic control and, incidentally, for substantial revenue? Have you set up municipal car parks for the all-day autoist?

Are your tax and water-collection offices fully mechanized?

Have you a central garage for auto servicing?

Does your accounting office boast a full-fledged cost-finding system and an effective method of budgetary control?

Is your water distribution system virtually automatic in operation?

Do you use the latest electronic devices in your detective bureau?

How is your purchasing done—by the old "run out to the corner hardware store" method? Or do you have it centralized in competent hands?

What are your personnel practices? Are they modern or do they rest on the old basis of fear and intimidation?

And perhaps most important of all, under what form of organization are you operating, bearing in mind that this is a vital factor in determining the efficiency with which the municipal machine operates?

Police and Fire Departments

A successful experiment begun in Montclair some four years ago was described by Commissioner Faulkner:

In order to lift morale and interest in the police and fire departments, we organized an Advisory Staff consisting of the director as chairman, two representative citizens, the chiefs of each department, and elected representatives of the officers and of the men.

Since that time at regular monthly meetings, all policy matters pertaining to the departments' operations have been discussed. Trials for delinquencies are held before the entire group. Every member of the staff is on an equal footing once he enters the meeting room.

The result has been an extraordinary increase in the sense of individual responsibility and pride in the department. The threat of uncertainty which is an inevitable consequence of changing administrations has largely been removed. Delinquencies are fewer. The men are no longer mere cogs in a machine, but are men in their own right.

The experiment is no longer such. It has become a permanent feature of municipal administration in Montclair.

Stimulating Citizen Interest

The use of various devices for stimulating citizen interest in municipal affairs was urged by the speaker. Regarding one of these, Commissioner Faulkner said:

Several years ago in Montclair, we inaugurated a plan of asking a representative group of senior high school students to visit the various town departments and thus get a first-hand knowledge or feel of municipal operation. They then reported back to their fellow students, so that all had some idea of their local government. As a prelude to the visits this year, I addressed the entire class in an effort to give its members a broad picture of what government is and how intimately it affects their daily lives.

High school students are sometimes a bit difficult to handle on a subject so seemingly mundane, but much to my surprise they followed the half-hour discussion with the most intense interest. The questions they asked were as intelligent as one might expect from a much more mature audience.

Government can be made interesting—yes, even dramatic—if a sincere attempt is made to do so, because when it is understood that government is largely a delegation to the few of power for dealing with the problems of the many as they live together in the modern community, one may reasonably expect, if whole-heartedly encouraged by municipal officials, the interest and participation of the citizen who makes this delegation at the polling place will follow through into its results.

The annual report . . . the post card poll of public opinion . . . the use of citizen committees for the study of special problems, the organization of a civic council composed of representatives of civic groups, urging attendance at meetings of the governing body—all these devices are good and have their place in arousing and maintaining citizen interest. It is upon such a foundation that the democratic process must rest.

To Help Democracy Function

Discussing various types of municipal organization, Mr. Faulkner stated as his studied belief that the Council-Manager Plan, essentially the same as that followed by private enterprise, is the most effective instrument for accomplishing maximum results.

Turning to broad problems of citizenship, "We live today in a hard embittered world," said Mr. Faulkner. "Some of the old idealisms, the old concepts of religious life, the old standards of personal, national, and international conduct are gone. New ones have not yet taken their place. But of this we in America can be sure—there is nothing so sacred as the freedom of the individual—a freedom to be modified only by the rights of his fellow man as they live together in the communities of a modern world.

"It is for us who are entrusted with so much of the democratic process to be sure that we fulfill with all our hearts and mind and strength the responsibility which that process has bestowed upon us."

Cities Are What Men Make Them

Cities are what men make them
Whatever those cities may be;
Slothful, sloven, sleepy;
Progressive, beautiful, free.

If the hearts of the builders are noble,
At one with the day and the deed,
They'll grow unto greatness and grandeur
For thus it was ever decreed
That cities are what men make them,
Wherever those cities may be:
Set out on the desolate desert
Or down by the surging sea.

Though they cleave to the breasts of mountains
Or nestle by rivers broad,
Cities are what men make them
On land that is given of God.

The foregoing poem (authorship unknown), published many years ago in this magazine, was quoted with credit to THE AMERICAN CITY by Commissioner Faulkner following the address here abstracted.

Columbus, Ohio, Plans Water Improvement

A TWENTY-BILLION-GALLON impounded supply of water will provide the means of eliminating the dangers of a recurrence of the 1934 and 1944 drought in Columbus, Ohio. This added supply will call for the construction of a new water treatment plant, thereby providing flexible operation from two plants and eliminating difficulty in the event that either breaks down.

The potential water supply will draw from the Big Walnut Creek, whose water is softer than that of the present supply obtained from the Scioto River. The water can be carried through the existing channel to a diversion dam and pumped to the new treatment plant in this vicinity. The high land located here would allow the construction of a ground level reservoir from which water could be delivered to the city by gravity.

Present System

The present water system consists of the Griggs Reservoir with a present storage capacity of 1.4 mg, and the O'Shaughnessy Reservoir with a storage capacity of 5.4 mg, making a total storage capacity on both dams of 6.8 mg. The Griggs Dam is situated on the Scioto River, 4½ miles above the present plant, and the O'Shaughnessy Dam on the same river is about 15 miles above the plant. The capacities mentioned include that attained by installing 3-foot flashboards on the O'Shaughnessy Dam and 2-foot flashboards on the Griggs Dam. Water is carried to the plant intake by the river channel where it is pumped out of the river, treated, and then pumped to various sections of the city for distribution. The present plant was designed to handle 50 mgd and has produced as high as 56.2 mgd in 1944, the wartime peak.

The present yield of Griggs and O'Shaughnessy Reservoirs, which includes additional water attained by the installation of flashboards, is 51.32 mgd, based on the period of lowest yield, which was April 1934 through May 1935.

The present population of Columbus is 334,807. Population trend studies indicate that metropolitan Columbus will have a population of 600,000 by 1975.

Studies of the area indicate that the proposed dam will inundate much valuable farmland. To minimize this inundation, the proposed design anticipates using a dam equipped with Taintor crest gates constructed on top of the overflow spillway. Thus the overflow spillways are taken 15 to 20 feet lower than the top of the gates and the normal level of the reservoir. Enough gates are provided so that the maximum flood can be taken care of without causing the height of the reservoirs to rise above the fixed reservoir elevations.

The spillway and gates will have the added advantage of providing some flood control measures during the smaller floods by the proper use of the gates.

The development program is contained in a report delivered by Myron T. Jones, Consulting Engineer, Columbus, Ohio, for Elmer A. Keller, Director of Public Service, Columbus.

Bryan Improves Pressure Distribution

Bryan's water tower. *ARO* is the name of an industrial plant near the tank.

A NEW 400,000-gallon elevated water tank, new pumping equipment and roughly 19,000 feet of feeder mains constitute the essential features of the water improvement under way at Bryan, Ohio. The tank was erected last year.

Design of the tank was based on an engineering study of Bryan's population of 6,000 and the character of its distribution system. The engineers assumed a maximum fire flow of 15,000 gpm plus a peak industrial and domestic water use occurring simultaneously and assumed that 35% of these requirements were to be supplied by the tank and 65% by the pumping station. They studied the effect of flow through the distribution system on the basis of the Hardy Cross system.

To determine the height of the tank, they added to the ground elevation at the tank site the necessary head of water to produce 40 pounds per square inch in dynamic pressure at hydrants in the city likely to serve a major fire.

Prior to the use of this tank, the town distributed water by direct pumping, maintaining a pressure of 60 pounds psi during periods of normal operation and raising it to 90 pounds psi during fires. The plant can now maintain a constant pressure of 65 pounds psi and can rely on the tank to furnish the necessary increase during fires.

The tank is an all-welded structure with an ellipsoidal bottom and roof. Eight cylindrical columns support the tank and a riser pipe 5 feet in diameter connects it with the distributing system. A ladder with a safety cage mounted on one of the cylindrical legs provides access to a platform on the center of the roof. The tank uses Rustop cathodic protection.

Golden Anderson altitude valves govern the height of the water in the Chicago Bridge and Iron tank.

The improvements were designed by Jones and Henry, Consulting Engineers, Toledo, Ohio.

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Orange County Boosts Ground Water Recharge

By breaking up the sandy riverbed and loosening the vegetation, it is easy for the intermittent Santa Ana River flows to filter into the ground.

The result is an underground reservoir that delivers cool, pure water to the pumping station

THERE is scant waste of water from the flashy Santa Ana River in Orange County, Calif. This important water supply is instead policed by the Prado Dam and put to work recharging a vast non-evaporation underground reservoir. Rather than build a dam and store this water on the surface, and thus be confronted with the need for filter plants, and to suffer evaporation losses from the impounded supply, the Orange County Water District has adopted a program of conditioning the riverbed so that the water can infiltrate the ground and thus become available in a cool, unchanging state, free from turbidity, and requiring only pumping. The Prado Dam releases flood water from the Santa Ana in a flow roughly equal to the amount the recharge area can absorb. By this method the district makes water available both for municipal and irrigation uses.

In order to encourage this groundwater recharge, the District uses an International TD-18 diesel crawler tractor to work down the vegetation in the bed of the Santa Ana River, to level off the riverbed and to loosen top soil so that greater amounts of water can seep into the bed when the river is flowing. The tractors concentrate on an 8-mile stretch of the riverbed.

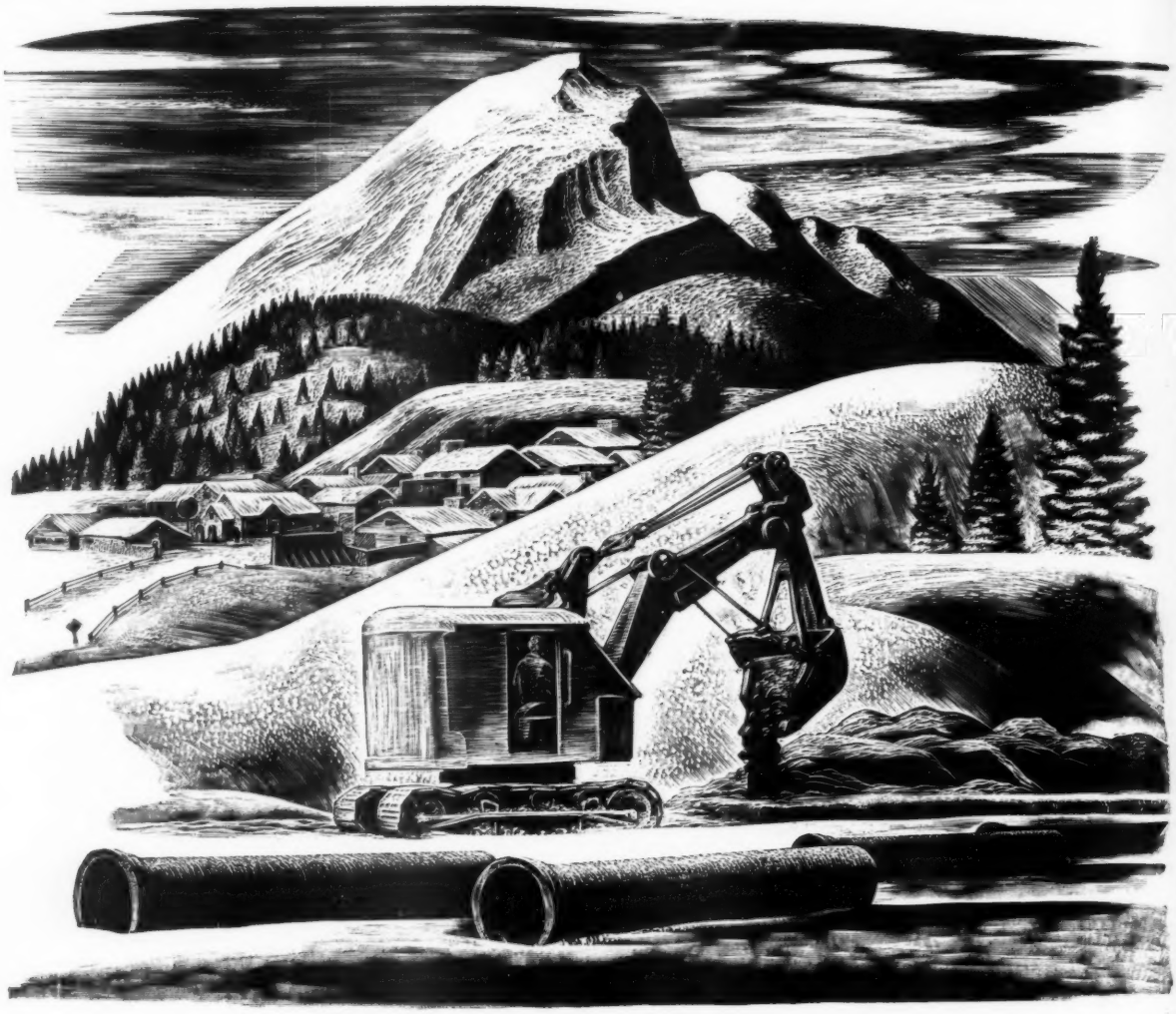
Riverbed Conditioning

The District uses several methods to condition the riverbed. One is to pull a single-gang disc harrow in order to chop the surface clay into fragments that can be washed away easily by the river. This also inhibits weed growth.

Another method is to level the river bottom by either pulling a "land leveler" drag or by building bridges or channels to divert the water into the high spots and help the river to spread over the entire channel. Still another method that is yet in the experimental stage is that of using a "ridger." This device is 24 feet wide, and is pulled by two International tractors. The purpose is to ridge the channel and pull clay fills 2 or 3 inches thick in the top 6 inches into long windrows or ridges that can be removed by the water or by other means. The District is also experimenting with a heavy tractor-pulled scarifier which will break underlying clay seams and thus facilitate infiltration.

Another aid to infiltration is a stable, broad riverbed without narrow channels and which allows the water to spread evenly over as much area as possible and to flow as slowly as is practical. To help make this possible, the District has built five stabilizing dams at quarter-mile intervals across the entire channel. Each stabilizer is built of rolled and tamped clay and protected with a covering coat of asphalt. The packed clay extends 3 feet below the surface, and is approximately 8 feet wide at the top. The entire structure is just slightly below the bed of the river, and is invisible most of the time, concealed by the river sand. When the water begins to flow, the stabilizers prevent the formation of a channel and form, in effect, 1,000-feet wiers that keep the flow under control. This is effective in diminishing river flows.

The Orange County Water District lies south of the city of Los Angeles. It was formed by a special act of the legislature in 1933 and covers the irrigated area of Orange County, with the exception of three cities that are supplied almost entirely by Metropolitan Water District from the Colorado River. An area of 250,000 acres, upon which 200,000 people live, is included in the District boundaries. Dion L. Gardner is secretary of this district.



Original Woodcut by Lynd Ward

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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, JR.
With the assistance of Frank B. Williams and Edward M. Bassett

Location of Airports— Zoning Variance

NEW YORK. *Underhill* v. *Board of Appeals of Town of Oyster Bay*, 72 New York Supplement (2d) 588 (New York Supreme Court, April 24, 1947).

A proposal by one Spohrer to build an airport in the township of Oyster Bay aroused considerable public opposition, and on appeal permission for the airport was refused, on the grounds that the proposed tract was too narrow and that the airport should be placed in a more isolated position. Subsequently, the Board of Appeals granted permission to the Hicksville Airpark Club (organized by Spohrer) to build an airport in a thirty-five acre tract directly across the road from the previous site, and in a residential district. The airport was constructed there, with hangars, gasoline tanks, and various other structures, and was in operation for a year. The neighbors appealed to the courts, and the airport was ordered abandoned on three grounds.

First, the airport was held to be located too close to neighboring airports to satisfy the requirements to a New York statute regulating the spacing of airports. Second, the construction of this airport was held not to satisfy the requirements for variances in the zoning ordinance of the Town of Oyster Bay, in particular because it would obviously interfere with the enjoyment of the surrounding property. In this connection the Court also stated that the organization of a "Club" necessarily meant that the facilities would not be available for use by the public, although no examination was made of the requirements for admission to the Club. No attempt was made here to justify the variance on the grounds of practical necessity or unnecessary hardship, and clearly such an argument would have had no validity. Third, the Court maintained that the proper standards for zoning had not been set up.

Beaches— Public Use— Parking Space

NEW YORK. *Pansmith* v. *Incorporated Village of Island Park*, 72 New York Supplement (2d) 575 (New York Supreme Court, May 21, 1947).

A village development corporation conveyed an adjoining beach to the village, subject to certain restrictions. As reformed by court order in 1946, these conditions provided that there should be no buildings on the beach (except for a fence and first-aid and comfort stations), and that the beach should be open for general public use, subject to a reasonable admission fee for maintenance. The neighboring landowners brought an action to limit use of the beach to inhabitants of the village, and to prevent establishment of a parking lot. The action was dismissed on all grounds.

The plaintiff's interpretation of the deed of conveyance to the village, under which interpretation use of the beach would be restricted exclusively to inhabitants of the village, was held not to be plausible, since it would forbid use of the beach by all visitors both of the local hotels and of the village inhabitants. It was also held that the proposed restriction would render the deed void as a dedication to only part of the public. Moreover, although the deed made no mention of a parking lot, the Court held that under present conditions such a lot was a normal and necessary adjunct for any beach.

Restrictions on Removal of Houses Outside Town Limits

COLORADO. *Town of Eckley* v. *Meyers*, 181 Pacific (2d) 1014 (Colorado Supreme Court, June 16, 1947).

The town of Eckley, Colo., having a population of about 250 and an assessed valuation of about $112,000, was obligated to the extent of (1) $17,000 of its own water bonds and (2) part of an unstated amount of school district bonds. Several persons were planning to have their houses moved to places outside the town limits in order to escape the relatively heavy tax burden assessed by the town. A town ordinance passed in 1942 required permits, together with payment of current taxes and posting of a bond for damages, as a prerequisite to moving any buildings into, out of, or within the town. However, if the owner of a building decided to move it to a point outside the town, he was required in addition to make a further payment of $500 to the town. The town brought this action to enjoin the removal of a building to a point outside the town by persons who had complied with every requirement except the cash payment of $500. In the action it was admitted that the purpose of the ordinance was to prevent depreciation of the security for the outstanding bonds by the removal of buildings from the town limits.

The Court construed the ordinance as in effect a direct prohibition against moving buildings to points outside the town limits, and referred to the cash payment as requiring a person so moving a building to be "mulcted in the absurd sum of $500." The ordinance was therefore held unreasonable, discriminatory, and unconstitutional.

Garages on Private Lots

KANSAS. *Piper* v. *Moore*, 183 Pacific (2d) 965 (Kansas Supreme Court, August 22, 1947).

The Sears Roebuck store at Salina, Kans., sold reconditioned automobile motors, and one Piper conducted a business (usually on a part-time basis) in installing these motors in a garage building at the rear of the lot adjoining his house. Under the local zoning ordinance, the "A" residence district regulations permitted one-family residences, together with various accessory uses including a single private garage and also "home occupations engaged in by the occupants of a dwelling not involving the conduct of a retail business on the premises."

In the same ordinance, the definition of a public garage included any premises where automobiles were equipped for operation or repaired, or kept for sale or hire, but did not include exhibitions and showrooms for models. In the opinion, Piper's business of installing reconditioned motors was held (1) not to be a home occupation, and (2) to be a public garage rather than a private one.

Anti-Negro Covenants

OKLAHOMA. *Ehlers* v. *Clopton*, 184 Pacific (2d) 247 (Oklahoma Supreme Court, July 1, 1947).

A convenant signed in 1938 against sale to or occupancy by Negroes of certain lots in Oklahoma City provided that it should come into effect when signed by the owners of 51% of the lots covered by its terms. Since Clopton, one of the signers and the plaintiff in this case, owned a one-third interest in two of the lots and the owners of the other two-thirds interest did not sign, the Court held that one-third of these two lots should be counted in determining the percentage of owners' signatures obtained. Moreover, one of the lots here conveyed to Negroes was not listed by number among the lots covered. Yet the Court held that since the text of the covenants did set forth the street address of the original owners of this lot, that constituted sufficient notice to prospective purchasers of the existence of the racial covenants and therefore in effect reformed the covenants to include that lot.

Detroit Seeks Metropolitan Planning Director

AN EXECUTIVE director is being sought for the newly organized Detroit Metropolitan Area Regional Planning Commission. Applicants should have administrative ability, successful experience in public relations, particularly with governmental units, and background in regional planning or in allied fields. The salary range is from $8,000 to $10,000 per year. Applications should be sent to George F. Emery, Secretary of the Commission, 902 Griswold Building, Detroit 26. Mich.

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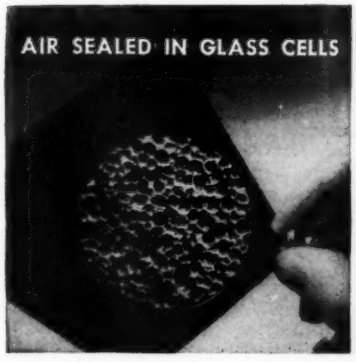

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Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Annexation Ordinance—Failure to Observe Mandatory Requirements—Validity

Where borough validly adopted annexation ordinance, but neglected to comply with mandatory statutory requirements by failing to accompany certified copy, filed in court of quarter sessions, with plot showing courses and distances of boundaries before and after proposed annexation, by prematurely filing ordinance and failing to properly publish ordinance, held ordinance never became effective. *In re Versailles Township*, 53 Atl. (2d) 880 (Pa. Super. Ct., July 17, 1947).

City Employes—Civil Service—Dismissal as Unqualified for Original Appointment

In proceeding to compel reinstatement as police surgeon of City of Yonkers, held city manager's defense that petitioner, not being qualified to perform major surgical operations, should not have been appointed to such position, was insufficient in law where Municipal Civil Service Commission certified petitioner for appointment from regularly established eligible list. *Polenski* v. *Montgomery*, 71 N. Y. S. (2d) 386 (N. Y. Sup. Ct., Westchester Co., Apr. 14).

Civil Service—Competitive Exam—Necessity for

In action for declaratory relief, held one who accepted temporary war emergency appointment as police patrolmen could not acquire permanent civil service status without taking competitive examination and being placed on list of eligibles. *Ticknor* v. *City of Sacramento*, 181 Pac. (2d) 803 (Cal. App., June 11, 1947).

Civil Service—Temporary Appointment Ripening Into Permanent One

In proceeding for order to place petitioner on special military eligible list for position of Medical Officer for City of New York, held that, though temporary appointment cannot ripen into permanent one unless appointee is eligible for permanent appointment because standing among first three on eligible list, temporary appointment will ripen into permanent appointment where appointee possesses such eligibility. *Battaglia* v. *Morton*, 71 N. Y. S. (2d) 380 (N. Y. App. Div., June 24, 1947).

Election—Notice of—Validity of Sunday Publications

In quo warranto proceeding, held that publication of notice of election on question of forming metropolitan district on Sunday was not "service of process" within statute prohibiting service on Sunday and such publication did not render proceedings invalid. *Black* v. *Landel Metropolitan Dist.*, 28 N. W. (2d) 210 (Mich., June 27, 1947).

Incorporation—Description of Boundaries—Sufficiency

In proceeding for incorporation, held designation of center of public highway as boundary of proposed borough was compliance with statutory requirement with reference to particular description of boundaries, notwithstanding bearing of highway not indicated with reference to common meridian or that plot showed highway as straight, whereas in strictness it was not. *In re Borough of Pleasant Hills*, 53 Atl. (2d) 882 (Pa. Super. Ct., July 17, 1947).

Nuisances—Stock Pens as—Authority of City to Abate

In declaratory judgment, held that stock pens maintained by auctioneers in business and residential neighborhood, giving off offensive odors and causing flies, were "pens, stables and stockyards" which could be regulated by city, and constituted nuisance which city could suppress by ordinance. *City of Nevada* v. *Welty*, 203 S. W. (2d) 459 (Mo., June 9, 1947). *Reh. den.* July 14, 1947.

Ordinances—Prosecution Under as Criminal or Civil Action

In action for writ of prohibition, held prosecution under ordinance of county or municipality is "civil action" and conviction does not bar prosecution by state in "criminal action", but legislature cannot grant municipal or county authorities power to treat violation of ordinance as "crime" or misdemeanor. *State ex rel. Keefe* v. *Schmiege*, 28 N. W. (2d) 345 (Wis., June 12, 1947).

Policemen—Discharge for Conduct Unbecoming an Officer—Effect of Dismissal of Criminal Charge

In mandamus to compel rehearing, held competent evidence supported dismissal of policeman from department by police trial board for conduct unbecoming an officer notwithstanding acquittal of criminal charges by circuit court jury. *Purdie* v. *Detroit Police Department Trial Board*, 28 N. W. (2d) 283 (Mich., June 27, 1947).

Public Utilities—Rates—Discretion of Commission

On appeal from order of Public Utilities Commission fixing rate, held court will not substitute its judgment as to value of public utility property or cost of production and distribution of utility service for finding of commission, in absence of clear showing of abuse of discretion or omission to consider some element of basic rate structure or rate of return which makes finding unlawful and unreasonable. *City of Marietta* v. *Public Utilities Commission*, 74 N. E. (2d) 72 (Ohio, June 25, 1947).

Religious Freedom—Taxation—Personal Property

In action to recover taxes paid under protest, held property used in exercise of rights of freedom of press or religion subject to uniform tax imposed on all alike and not invalid, as applied to literature of religious organization, as restricting exercise of religion or freedom of press or speech. *Watchtower Bible & Tract Soc.* v. *Los Angeles County*, 182 Pac. (2d) 178 (Cal., July 1, 1947).

Sidewalks—Injury Caused by Adjacent Landowner—Liability

Where complaint for injuries charged that county as adjoining landowner created nuisance by actively interfering with sidewalk, which city had duty to maintain, causing it to be unsafe and out of order and causing plaintiff to fall, held county's liability primary and city's secondary. *Holl* v. *City of Merrill*, 28 N. W. (2d) 363 (Wis., July 1, 1947).

Special Improvement Bonds—Paying Out of Order—Damages

In action against town to recover value of bonds, held that owner of special improvement bonds could maintain action for damages resulting from act of town in paying bonds out of numerical order, thereby causing depletion of fund out of which bonds were payable to such extent it did not contain money for payment of plaintiff's bonds. *Crist* v. *Town of Gallup*, 183 Pac. (2d) 156 (N. M., Mar. 19, 1947). *Reh. den.* Aug. 2, 1947.

Taxation—Receipts from Annuity Contracts

In action to review determination of Comptroller of City of New York assessing deficiency of business tax, held since only tax imposed by local laws of city on business of insurance is measured by "receipts from premiums paid," receipts from annuity contracts not premiums not taxable as receipts from some other type of commercial or business transaction. *Guardian Life Ins. Co. of America* v. *Joseph*, 71 N. Y. S. (2d) 396 (N. Y. App. Div., June 30, 1947).

Tax Exemption—Municipally Owned Property

Under statute subjecting to taxation lands of municipality used for water supply but exempting buildings and improvements thereon, buildings on lands owned by city for protection of watershed held exempt from taxation by township, notwithstanding buildings were rented out by city and not connected with development, improvement, or maintenance of watershed property. *City of Newark* v. *Jefferson Tp.*, 53 Atl. (2d) 813 (N. J., Dept. of Tax and Finance, June 24, 1947).

Taxation—Exemption of Machinery and Tools

Tanks of oil refinery used to perform various essential operations in manufacture of refined petroleum products were "machinery and tools used in manufacturing" within statute, excluding such machinery and tools from real estate assessment. *Gulf Oil Corp.* v. *City of Philadelphia*, 53 Atl. (2d) 250 (Pa., May 28, 1947).

Water Plant—Void Lease—Recovery of Interest on Loan

In action of assumpsit, held interest on money borrowed and expended in good faith in operation and maintenance of municipal water plant by lessee thereof under lease subsequently held void could be recovered from municipality. *Lockard* v. *City of Salem*, 43 S. E. (2d) 239 (W. Va., June 10, 1947).

Workmen's Conmpensation—Right of Employer to Recover from Estate of Deceased Tort Feasor

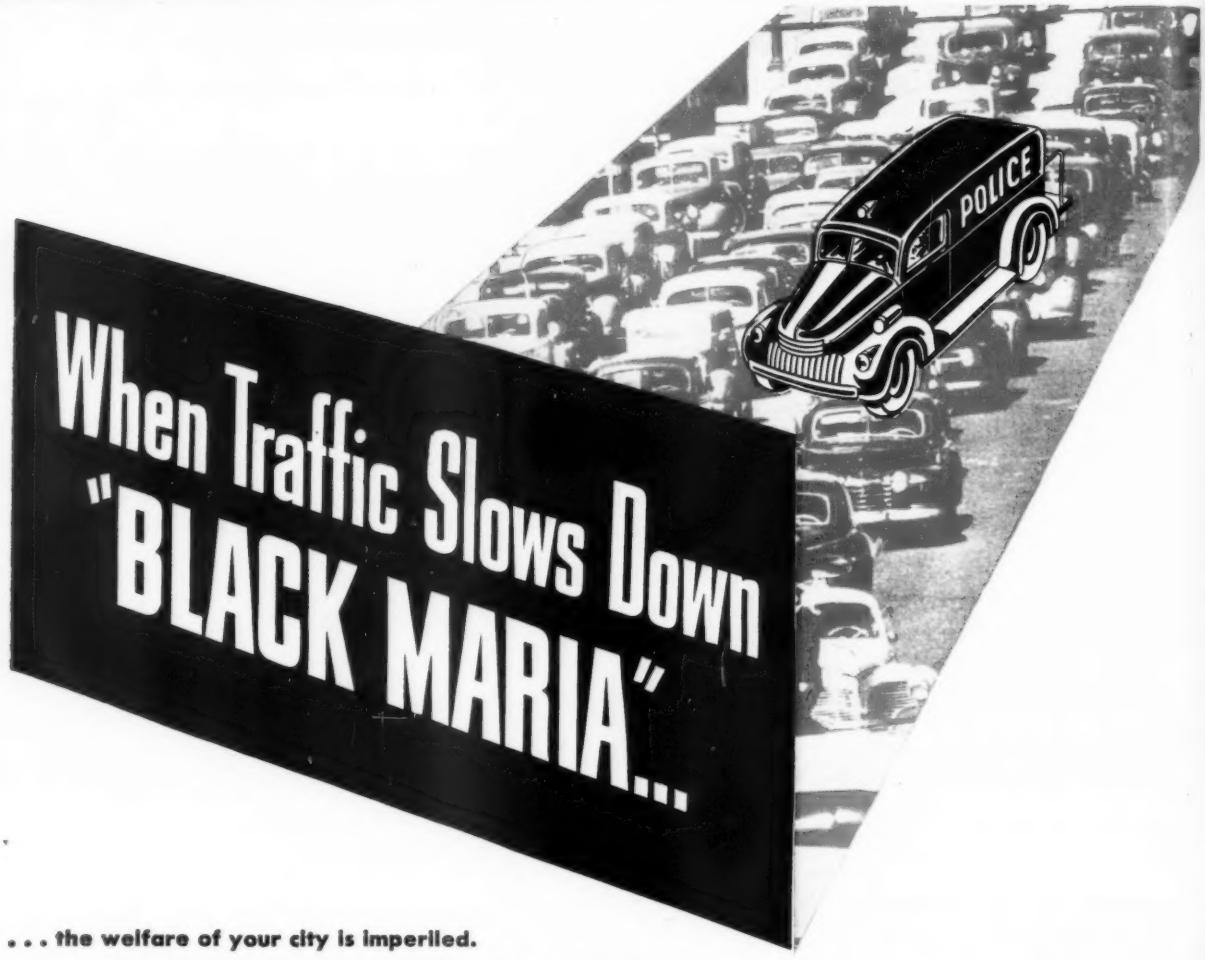
In action to recover amounts paid for medical attention and compensation due an employe because of personal injuries received as result of deceased's negligence during lifetime, held employer may sue administratrix of decedent's estate for monies so expended. *City of Los Angeles* v. *Howard*, 182 Pac. (2d) 278 (Cal. App., July 2, 1947).

Many More Cities to Own Utilities

FIFTY-THREE localities in the South and Northwest are planning to spend a total of $155 million on publicly owned utilities, the Municipal Finance Officers Association reports.

Forty cities in Alabama, Georgia, and Florida will begin installation of natural-gas distribution systems this year, to be financed by revenue bonds estimated at $20 million.

In Washington, 13 public utility districts are negotiating for purchase of properties of the Puget Sound Power and Light Company.



. . . the welfare of your city is imperiled.

To give all public services greater right-of-way,

reduce traffic congestion by encouraging more transit riding.

A high transit riding habit in your city can strike a telling blow at traffic congestion and provide greater right-of-way for all vital public services. Here's why—

Transit Vehicles Use Street Space Most Efficiently. One trolley coach, for example, seats at least 44 passengers—equaling the average capacity of 26 automobiles! Each trolley-coach rider uses only 70 square feet of street space, as compared with 500 square feet for an automobile rider.

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How You Can Increase Transit Riding. So that people will prefer to leave their cars at home and ride by transit, encourage your transit system to modernize with vehicles as attractive as automobiles—trolley coaches and modern streetcars. It's been proved that these electrics are so smooth riding, so fast and comfortable that they've increased transit riding everywhere they operate. Find out from your G-E transit specialist how these modern vehicles can help your traffic problems. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

107-205

Have you seen *Lifestream of the City*, the movie that shows how to reduce traffic congestion? Ask your G-E representative to arrange for a showing.

An Invisible Street-Opening Job

By GEORGE W. HAMLIN
Commissioner
Division of Water and Heat
City of Cleveland, Ohio

AMONG cities of over 200,000 population, Cleveland is a leader in traffic concentration. There are said to be more cars per square mile and more cars per mile of street than in any other American city of that classification. The city's main East Side traffic artery is not the nationally famous 20-mile Euclid Avenue, but the paralleling six-lane highway, Carnegie Avenue.

Cleveland's traffic engineers found in June 1944 that Carnegie Avenue alone moved more than 28,000 passenger cars and bus lines daily between downtown Cleveland and its East Side suburban communities. The present figures are doubtless higher, because there was gasoline rationing at that time.

Traffic lights were synchronized to speed up Carnegie traffic, right-of-way was procured, and construction started on two other East Side highways, one to run in close proximity to the course of Carnegie. Since these highways would not be completed and available to traffic for several years, city officials saw that chaos might result from breaking up any of the Carnegie lanes in order to replace underground facilities of public utilities.

Since 1912 the city has operated an extensive central heating system supplying street steam to the Euclid-East 105th Street and Carnegie area.

Just such a problem arose when it became necessary to supply heating service to several large buildings on the south side of Carnegie Avenue. Though the run would be only 100 feet, Carnegie Avenue would have to be closed if conventional methods were pursued. It would necessitate rerouting traffic to other nearby streets, which definitely were not capable of handling such a tremendously increased volume.

Meetings of the city engineering staff, including Messrs. Antweiler, Simmermacher, Williams, and Lehman, brought forth the suggestion to tunnel under Carnegie Avenue. The plan was for a tunnel not to exceed 8 feet in depth, in order to avoid interference with other underground utilities. Ample reinforcement would be required to prevent caveins. The performance of this project merits study by any American city faced with a similar situation.

A pit, 6½ feet by 15 feet, was excavated at the curb-line on the southeast corner of the intersection, from which a 3-foot-diameter tunnel was started toward a manhole directly across the street, 82 feet distant.

We selected Armco No. 8 gage spiral-welded iron casings for tunnel construction, after it was proved that the 10-foot sections provided were fully capable of sustaining the continuous impact imposed by Carnegie Avenue's traffic loads, even with but 5 feet of cover. To insure against injury to the galvanized coating or tunnel casings as they were pushed through horizontal excavation, a metal jacket was lap-welded around exterior corrugated surfaces of the sections.

Special geared tracks, shown in one of the photographs, facilitated pushing the tunnel casing into horizontal excavation as digging progressed. Naturally, since the tunnel was only 3 feet in diameter, only one man at a time worked in the tunnel, the others operating a small handcar into which excavation deposits were made. When a 10-

How a big city-owned steam main was extended across Carnegie Avenue without disturbing the street surface. Left: Typical traffic. Below, left: That hole is all there was at the surface. Below: Operator jacking tunnel casing through as excavation is being made. Below, right: Excavation under way at far end of tunnel, with handcar bringing out the spoil.

Shoppers Like Trolley Coaches because

THEY'RE ROOMY

Large, bulky packages aren't so troublesome when shoppers have deep, comfortable seats with plenty of leg room, wide aisles and ample head space.

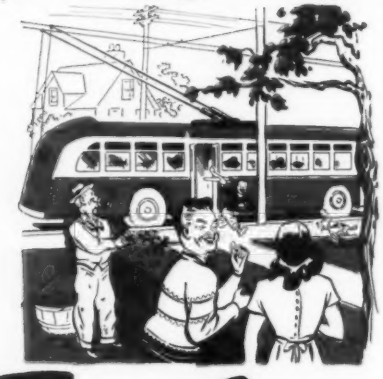
. . . SMOOTH

Smooth, even stops and starts mean a velvety, effortless ride. Shoppers can carry their packages with greater ease and safety.

. . . COMFORTABLE

Deep-cushion seats for restful riding and clean, odorless heat contribute to passenger comfort. There are no nauseating fumes.

Home Owners Like Trolley Coaches because



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The soft whisper of rubber tires, the quiet whir of an electric motor is all you hear as a trolley coach passes your home . . . no clashing gears . . . no roar of engines.

. . . ODORLESS AND CLEAN

Objectionable exhaust gases are unknown . . . no dirt-carrying fumes or odor . . . no traffic-film.

. . . SAFE

Curb loading and unloading keeps passengers off the street, and Dynamic Braking cuts skidding to a minimum. There are no volatile fuels to catch fire.

Teen Agers Like Trolley Coaches because

THEY'RE SMOOTH

The sleek trolley coach glides through traffic to movie or rink . . . or slips quietly along residential streets . . . no jerky stops . . . no lurching starts.

. . . FAST

Geared for a maximum speed of 50 mph, these "fleet-wheelers" get out in front, accelerating from a full stop to 25 mph in 9 seconds!

. . . MANEUVERABLE

Traffic-agile Trolley Coaches sweep around other vehicles or obstructions . . . roll right up to the curb to load or discharge.

Find out today how Trolley Coaches serve every segment of your community . . . home owners, hospitals, commuters, old folks, teen agers, shoppers. Call your nearest Westinghouse office. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-15137

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CUTS CRIME
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AT NIGHT, FREQUENTLY BY 50 PER CENT OR MORE
HELPS BUSINESS
BY INCREASING NIGHT ACTIVITY AND WINDOW SHOPPING
IMPROVES REAL ESTATE VALUES
INCREASES CIVIC PRIDE
SAVES TAXPAYERS MONEY
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AIDS THE POLICE AND FIRE DEPARTMENT
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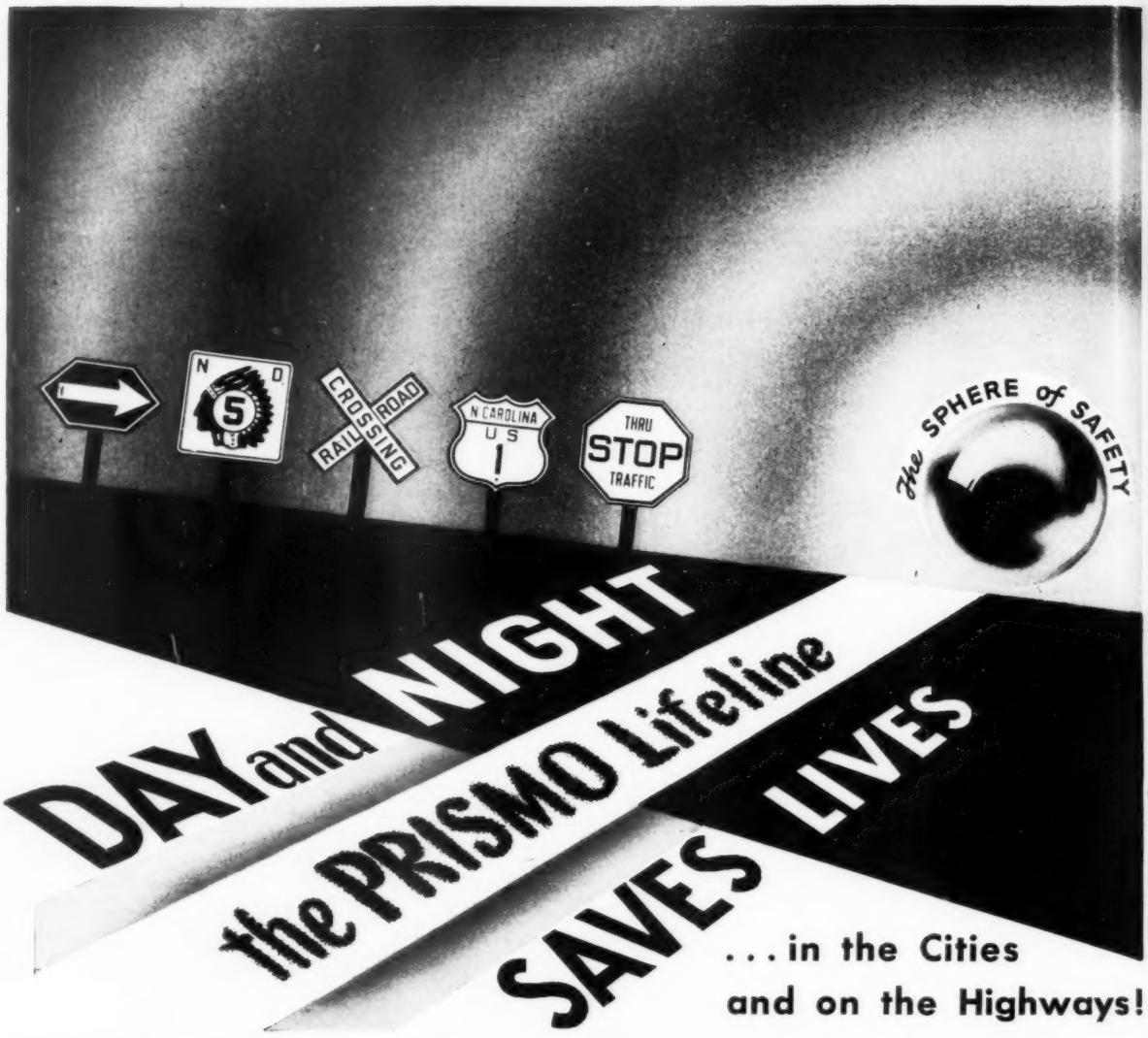

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Note how clearly it stands out, even from high heights and far distances.

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Standard in many cities, counties and states for all danger points, including no-passing zones, fog-lining and municipal marking.

Prismo outwears 3 to 5 applications of ordinary marking material. Gives 24-hour-a-day, widest angle visibility with reflectivity undimmed even after many years. Maximum economy, durability and diversity of application. WRITE FOR BULLETIN 461.

THE PRISMO SAFETY CORPORATION

HUNTINGDON, PA.

foot-long tunnel casing was completely driven in, a new section was lowered and coupled with casing in the tunnel. After the street crossing was completed, the bottom of the tunnel casing was paved with concrete to assist the jacking operations required to install the steam conduit.

For further flexibility to our own design and for maximum strength, insulation, and protection of our underground steam lines, Ric-Wil insulated pipe units were selected for installation in the completed tunnel. These units, entirely factory pre-fabricated in convenient 21-foot lengths, including pipe, insulation, and protected 16-gage corrugated iron housing, were quickly telescoped into the tunnel, and steam service connection was made to accommodate new customers.

The project was completed in three 24-hour working days at a cost considerably lower than that with the usual labor gangs required to open this busy street, install underground piping, and replace pavements. All tunnel construction and pipeline installation were handled by the Cleveland Maintenance Department under the direction of R. M. Mumma, assistant engineer.

Central Heating System

The central heating service for the Euclid-East 105th Street area originates at the remote Fairmount Municipal Pumping Station. It is the common practice of municipal water pumping stations to waste exhaust or excess steam after process and plant-heating requirements have been satisfied. By controlling this excess, and supplementing it with some live steam, Fairmount provides revenue-producing steam to Cleveland's second largest commercial community. The practical absence of smoke in this area is attributed to this service, which furnishes 237 million pounds of steam annually to 131 customers. The Kirtland Municipal Water Pumping Station on Cleveland's lakefront sells steam at the boiler-plant headers and supplies eight large East Side industrial plants. Other companies providing steam service in Cleveland include the Shaker Management Company, serving a model community with 140 million pounds of street steam annually, and the Cleveland Electric Illuminating Company, a private utility supplying steam heating facilities to better than 90% of downtown Cleveland. All are aiding Cleveland's fight for smoke abatement.

We are confident that we need not be concerned about the installation or the efficiency of this particular steam-pipe extension for many years to come. The additional steam load warrants the construction costs. This method of extension will be available to other Cleveland steam utilities planning extensions under city streets.

Private and municipal utility officials are aware of the costs and difficulties posed by installation of facilities in city streets. The obstruction of the street for so long a period is a serious factor. It is our opinion that, by the methods used in this installation, we have eliminated objections to such an operation.

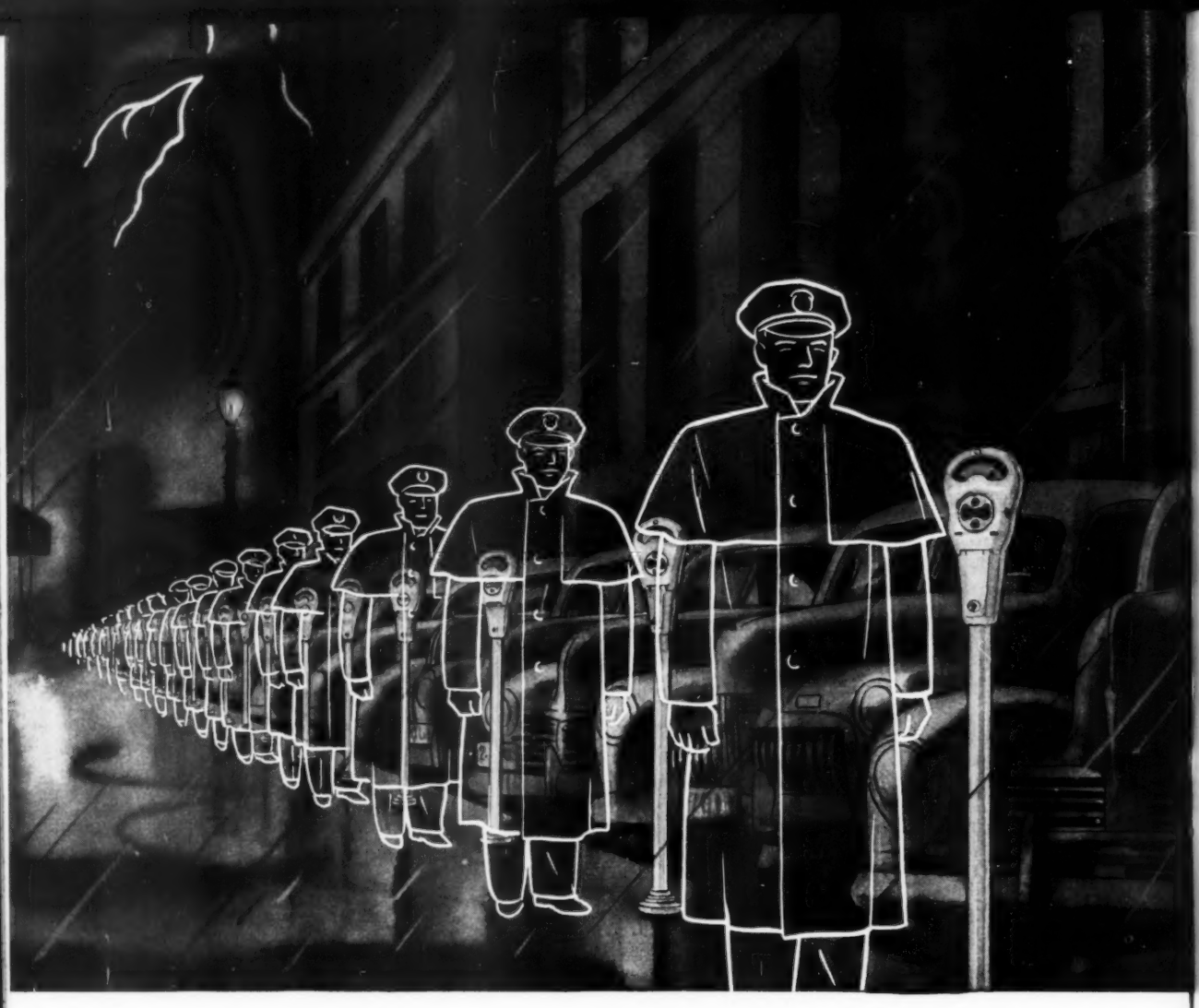
New Jersey's Singing Highway

OUT-OF-LANE drivers on New Jersey Route No. 6 are warned immediately. Notice is not given by a highway patrolman, but by a humming sound which emanates from the 6-lane highway's corrugated white concrete traffic markers.

The sound results from the suction of tires as they run over the special lane separators. The marker is built by leaving a 2-foot-wide space between lanes for the full depth of the slab. Regular gray concrete is then placed in this space, except for the top inch, which is of white concrete made with Atlas white cement of the Universal Atlas Cement Company, New York 17. The corrugations are made with a hand-scoring tool on the wet concrete.

This white concrete traffic marker is both permanent and economical. The safety is built in and requires no operating cost. Illumination at night is provided solely by reflection from the driver's headlights. The marker is especially bright on rainy nights, when the film of water on the reflecting faces increases the marker's mirror effect. With this new marker, drivers are given a double warning—they can see and hear.

Above, right: Close-up view of the traffic marker at night. Above: The lane separators on New Jersey's Route No. 6 produce a humming sound when the driver gets out of the lane. Illumination is furnished only by headlights from cars.



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who won't leave their posts in any weather

Yes, in driving rain or swirling snow these sturdy sentinels faithfully perform their task because they are engineered for *all* weather conditions. No wonder, then, that Anchorage, Alaska, selected Park-O-Meter . . . nor that blizzard-bound New England towns overwhelmingly prefer Park-O-Meter!

Says Police Captain Harold A. Smith of Allentown, Pa.: "The sturdy Park-O-Meter mechanism is fascinating; gets into your blood like police duty! We have added 1200 silent policemen to our force . . . in my opinion Park-O-Meter is the finest yet developed for the control of curb parking in any weather."

Yes, Park-O-Meter is the all-weather meter with instant adjustments for all conditions. Adjusts to a score of time-coin combinations! Completely *automatic* in action! Your community will like this all-new, postwar meter. *Write now for details.*

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PARK-O-METER COMPANY
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ASK TO SEE THE NEW 10-HOUR PARK-N-LOT MODEL

XUM

Parking Lot Meters Installed in St. Joseph

This parking lot was designed so parkers would not have to walk between cars.

By H. G. CROW
City Manager
St. Joseph, Mich.

ST. JOSEPH, Mich., until recently, had very limited and inadequate room for off-street parking, either public or private. The shopper had to walk long distances to and from the stores, the streets usually being filled with cars of merchants and downtown workers.

In 1944, the city arranged for the use of a lot 132 feet square, graded and surfaced it with cinders, and opened it for free parking. The lot was in the middle of the downtown retail district half a block from the main business street. It was always full of cars, mostly owned by merchants and workers, thus defeating the purpose for which the lot was designed.

In the spring of 1947, the city purchased this lot, with the thought of installing parking meters in the lot at the same time that they were installed on the streets. The lot is just across the street from Lake Front Park and from the municipal band shell, a location which presents a pleasing appearance.

The lot was divided east and west into two parking lanes, each lane 60 feet wide and allowing for four rows of cars parked at right angles on either side of the lane. Entrance was provided by an alley on the east, with rear entrances to the stores across the alley. Exit to the west is to Lake Boulevard.

Sidewalks were built in the center of the lot between the two parking lanes, with meters on either side of the walk. Walks were also built at the north and south of the lot for meters and for pedestrian ingress and egress, to avoid the necessity of any walking among the cars. The lot was paved with stabilized gravel base and with an asphalt surface.

Sixty-four Park-O-Meters, manufactured by the Magee-Hale Company of Oklahoma City, were installed. They are the automatic type and are regular parking lot meters, taking one to five nickels or one quarter. They are set for two hours for each nickel, or ten hours for a quarter. Meters operate from 9 a.m. to 6 p.m., except on Sundays and holidays. Since early June these meters have been in service both on the street and in the lot. The street meters are the regular type, taking one to five pennies or one nickel—12 minutes for each penny or one hour for a nickel.

The bus station is just across the alley from the lot, with hourly bus service to Chicago, 100 miles distant. Many people daily take the morning bus to Chicago and return in the evening. For a quarter, their cars are parked all day. Weekly collection from the lot is about $60. The total investment in the lot, complete with walks, paving, and 64 Park-O-Meters, is as follows:

Land	$20,000.00
Improvements	3,575.02
Meters (installed)	4,215.20
Total	$27,790.22

The city expects to use the parking-meter surplus revenue from both the street and lot for the purchase of additional off-street space.

Thirteen Canadian Cities Installing Trolley Coaches

WITHIN the past few months, many Canadian and United States transit properties announced modernization programs which include either substantial expansion of trolley-coach service or plans to start operation of these modern electrics. During the first quarter of 1947, ten Canadian properties had either started trolley-coach operation, or planned to do so, says the Ohio Brass Co., Mansfield, Ohio.

When all of the Dominion's trolley coaches now on order are delivered, 13 cities will be operating a total of 485 trolley coaches.

The management of the Calgary Transit System annnounced recently that all of its rail lines, except interurban and short feeder lines, will be changed over to trolley-coach operation. Sixty trolley coaches were ordered for seven lines.

The sales ability of trolley coaches was demonstrated by a trolley-coach training loop built on a 1½-mile motor-bus route carrying about 4,000 passengers a month. The first month's operation with trolley coaches resulted in an increased passenger load from 4,000 to 18,000 passengers. Within the next few weeks, riding on this loop increased to 24,000 passengers.

One of Canada's largest transit modernization programs is being undertaken in Vancouver by the British Columbia Electric Railway Company. An initial step of this program is the conversion of one street-car line and one motor-bus route to trolley-coach service. Forty-two coaches have been ordered.

FIRST LINE OF DEFENSE
against night accidents

As cities grow, their traffic problems increase—especially at night. More cars and more people throng the streets. Naturally, the need for better protection against night accidents and crime increases, too.

Years ago, Union Metal engineers foresaw this problem. They pioneered in the development of *steel* street lighting standards that would meet the needs on heavily travelled thoroughfares as well as quiet residential streets, in bustling cities or peaceful villages.

Today, thousands of Union Metal lighting standards—strong, durable, smart looking and economical—serve faithfully across the nation... America's first line of defense against the dangers that lurk in night's shadows.

Get the benefits of this *extra* safety and economy by including Union Metal tapered steel lighting standards in your street lighting improvement plans. They'll pay long-term dividends in protection *and* satisfaction. The Union Metal Manufacturing Co., Canton 5, O.

We regret the present extended deliveries due to the steel shortage, but the situation will improve and you will find Union Metal lighting standards well worth waiting for.

UNION METAL
Largest Producers of Street Lighting Standards

Street Lighting for the Traffic Age

By A. F. DICKERSON
Manager, Lighting Division
General Electric Company
Schenectady, N. Y.

THERE have been many milestones of street lighting progress between Edison's carbonized filament lamp, with an efficiency of 1.4 lumens per watt, and modern mercury and sodium lamps, which give as high as 40 to 50 lumens per watt. Utilities matched lamp-efficiency improvements with reductions in power charges to rates as low as one cent per kilowatt-hour in some localities. Manufacturers have cut maintenance to one-fourth of present costs by using luminaires such as the spun-sealed type. At the same time, the utilization of light has been more than doubled through the use of improved refractor-reflector luminaires.

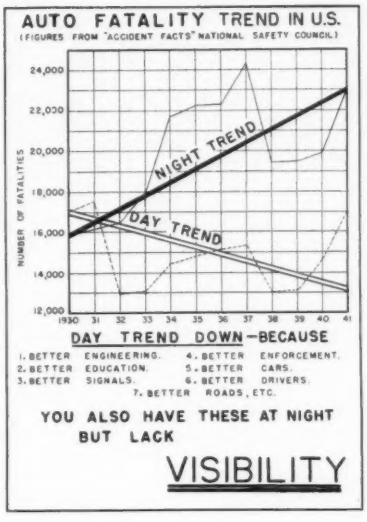
Today, for the same money, the public may receive several times as much street lighting as they received several years ago. There is growing evidence that the change from our horse-and-buggy street lighting is at long last in progress. Municipal officials, through better street lighting, are beginning to bring safety to their streets, business to their communities, and prestige to their administration. Also, most utility executives now seem to appreciate that they, too, have both an obligation and an opportunity in this respect. Many of them say that there is no better way to build good will than through the installation of good street lighting.

Through surveys and conferences with municipal and utility officials throughout the nation, I have been able to estimate the extent of the job in relighting America's streets. (Table 1.)

Perhaps it will be of interest to break down the estimate of the 4,000,000 luminaires to see how they will be used. (Table 2.)

The replacements plus the additions amount to the 4,000,000 lumens which are necessary to do a complete modernization job.

Many cities are already embarked on their relighting programs. Just what modernization means in Kansas City, Mo., is shown by the following tabulation. The system is owned and operated by the Kansas City Power and Light Co.



	Old	*New*
Number of lights ..	15,148	13,500
Total effective lumens	11,669,000	48,965,000
Yearly cost	$554,615	$626,000
Cost per 1,000 effective lumens ...	$47.53	$12.80

All new lighting in Kansas City is planned to equal or exceed the I. E. S. Code requirements. There will be no lamps below 4,000 lumens. From the tabulation, it is evident that the public is getting an excellent deal, because they will get traffic safety lighting at 27% of the present cost per unit of effective light. At the same time, the utility will receive a 13% increase in revenue and much good will.

Here are a few estimated expenditures for the large city programs that are either under way or being contemplated:

New York City	$20,000,000
Chicago	15,000,000
Cleveland	9,000,000
San Francisco	4,300,000
Detroit	4,000,000
Seattle	2,100,000
Kansas City	2,000,000
Buffalo	2,000,000

In fact, there is scarcely a city in the country without modernization plans, and most of these are quite extensive in scope. I am glad that the I. E. S. *Recommended Practice of Street Lighting* has been accepted generally as the minimum standards for most new lighting. If all streets in this country were lighted to conform to I. E. S. recommendations, the present 2,250,000,000 kilowatt-hours used for street lighting would rise to 8,000,000,000, and the $75,000,000 annual expenditures would treble. The question arises con-

TEN YEARS' NEEDS TO RELIGHT AMERICA—TABLE 1

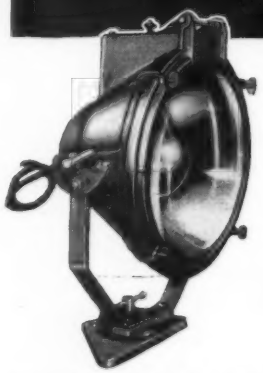
	Luminaires	*Installed Cost*
5,000 miles of business streets	400,000	$ 80,000,000
25,000 miles of traffic arteries	1,000,000	150,000,000
5,000 miles of freeways	500,000	90,000,000
15,000 miles of highways	600,000	80,000,000
Residential streets	1,500,000	100,000,000
	4,000,000	$500,000,000

LUMINAIRES NEEDED TO RELIGHT AMERICA—TABLE 2

Location	*Now Installed*	*Replacements*	*Additions*	*Total* 1957
Business streets	400,000	300,000	100,000	500,000
Traffic arteries	700,000	500,000	500,000	1,200,000
Freeways, highways, roads, bridges, etc. ..	200,000	100,000	1,000,000	1,200,000
Residential streets	2,200,000	1,000,000	500,000	2,700,000
Totals	3,500,000	1,900,000	2,100,000	5,600,000

The same lighting KNOW-HOW that lighted **the huge Los Angeles Coliseum . . .**

. . . is available to YOU



Crouse-Hinds Type LCE-1120
Long-Range Floodlight
for use where lighting towers
are at a great distance
from the playing field.

Crouse-Hinds Type MUA Alumalux
The ideal floodlight
for general sports lighting.

The Los Angeles Coliseum is one of the world's largest football stadiums with a capacity of 105,000 people. The proper lighting of this huge amphitheater called for skilled planning and the best of floodlighting equipment. Crouse-Hinds experienced illumination engineers designed the installation and Crouse-Hinds long-range heavy-duty Type LCE-1120 Cast Aluminum Floodlight was selected for the job because it is ideal for use where the light must be projected a great distance.

Crouse-Hinds Illumination Department has also planned the lighting of hundreds of small and medium size fields and the know-how that they have accumulated through long years of experience is at your service. Crouse-Hinds Type MUA Alumalux Floodlight has the characteristics that make it ideal for the efficient lighting of small fields or the average size stadium. It's economical too!

Night games draw BIG crowds. When the above photograph was taken there were 90,910 people in the Coliseum. It's the same story in small towns, many more people turn out for night games. Get your share of the extra revenue that night games bring in. Start planning NOW for floodlighting your field for next season's games. Send drawings and details, and Crouse-Hinds illumination engineers will gladly recommend the proper selection and arrangement of floodlights for any application.

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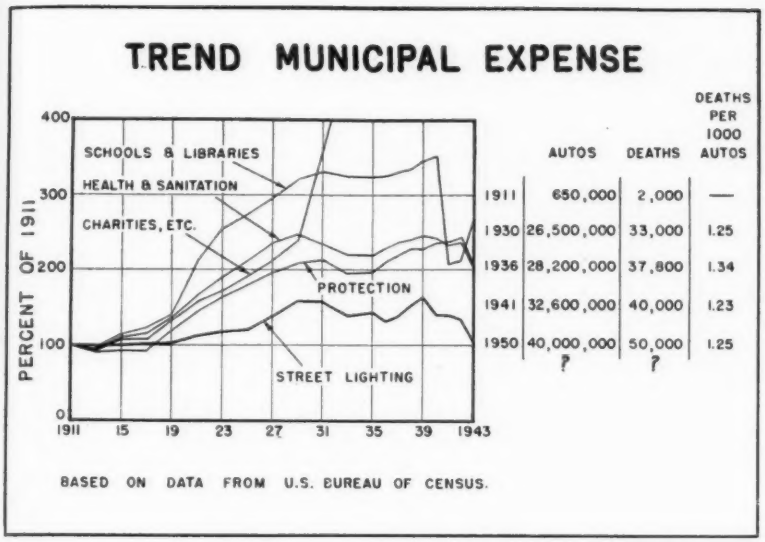


	AUTOS	DEATHS	DEATHS PER 1000 AUTOS
1911	650,000	2,000	—
1930	26,500,000	33,000	1.25
1936	28,200,000	37,800	1.34
1941	32,600,000	40,000	1.23
1950	40,000,000	50,000	1.25
	?	?	

cerning the ability of our towns and cities to pay for all this new lighting which they need so badly. The chart, "Trend Municipal Expense," shows that since 1911 other municipal services have increased from 200% to 300%, whereas street lighting has merely held its own. Meanwhile, traffic deaths have increased twenty-five fold. The fact is that we cannot afford *not* to spend more for adequate street lighting.

On an average, less than 2% of the municipal tax dollar is now spent for street lighting, although the percentage is much higher than this in small towns and villages. In New Jersey, the state pays the private utility companies for a 2,500-lumen lamp in a modern luminaire for each 200 feet of state-designated highway within the corporate limits of towns, villages, and cities. In general, more light than this is used, and the excess cost is borne by the community. The state wholly finances large quantities of continuous highway and intersection lighting outside of urban limits.

The national average per capita expenditure for street lighting is about $1. It should be at least $2. Free use of the I. E. S. *Recommended Practice* will soon help to bridge this difference.

Benefits

The number one benefit is accident reduction and life-saving. Just how serious the night traffic accident situation has become can be seen from the accompanying chart. The number of night traffic deaths first exceeded the day traffic deaths in 1931. Since that time, the trend of day deaths has been consistently downward because of the fine work in traffic engineering, education, and enforcement. The effects of this work have been continued into the night, but they haven't been good enough to offset the lack of visibility under our outmoded lighting. So, today, the ratio of night traffic deaths to daylight deaths is 2 to 1, although night traffic is only one-third as great as daytime traffic. Only lighting can turn the night curve downward.

Cities Improve Street Lighting To Reduce Accidents

ACTION by cities to provide better and more economical street lighting is under way in many sections of the country, the International City Managers' Association reports. A recent survey conducted by the Association indicated that one of the first steps toward more effective lighting is the use of fewer and larger lights, higher mounting heights, and the use of refractors.

The Association observed that the use of higher mounts for street lamps not only gives more light per unit cost but reduces glare, cutting the probability of night accidents. A national survey recently disclosed that two-thirds of all fatal traffic accidents occur after dark, and that half of these are directly caused by poor lighting. In many cases, both accident and lighting costs can be reduced by redistributing lights in proportion to the volume of night traffic which each particular city carries.

Cleaning Program for Luminaires Necessary

WHETHER a lamp is 2,500 lumens or 10,000 lumens, it will not produce effective illumination when it is dirty. To determine just how important this depreciation is on outdoor lighting equipment, a study was made of several typical floodlighting and street-lighting installations.

Floodlights Tested

Floodlights were obtained from a major-league baseball park, several other sports fields, a parking lot, and a service station. These were tested in a laboratory exactly as they were when removed from their locations. Then they were cleaned and tested again to note improvement. Similar data were also obtained for street lighting luminaires.

Inadequate maintenance was the reason why the enclosed floodlights at the major-league park produced a light output of approximately one-third their original value. After cleaning and relamping, the light output increased to 2.6 times its former value. Because the park is located in a very smoky section, the equipment must be cleaned at least once a season for efficient operation.

It was found that the open-type luminaire depreciates much more rapidly than the enclosed type, especially in smoky atmosphere. Unless a rigid cleaning program can be followed, open units should not be used where there is much smoke.

23% Illumination Lost By a Little Dirt

Even a slight film on street-lighting reflectors reduces the illumination on the street at least 19%. Tests conducted on several streets in Pittsburgh revealed that an average depreciation of 23% was caused by accumulation of dirt on the luminaires. The lamps had been cleaned only four weeks before the experiment.

Aluminum refractors with Alzak finish resist corrosive attack very well and generally can be restored almost to their original reflectivity. However, strong alkaline or acid cleaning agents permanently damage the reflecting surface and must not be used on these reflectors.

Outdoor lighting equipment should be thoroughly cleaned once a year, or as often as necessary to maintain the illumination level above 75% of its initial value.

FRANCES T. TILLEMANS
Westinghouse Electric Corporation
Minneapolis, Minn.

Condensed from a paper presented at the National Technical Conference of the Illuminating Engineering Society, New Orleans, La., September 15-19, 1947.

Streets in Pittsburg, Kans., 20 Times Brighter

New fixtures at railroad crossings have doubled the amount of illumination.

By C. M. COOPER
City Engineer

LAST year, Pittsburg, Kans., decided to do something about its inadequate street lighting. A. L. Harris, illuminating engineer for the Kansas Gas and Electric Company, was authorized to proceed with a survey and planned layout for the city. Within the past few months, the installations were completed, and Pittsburg's 25,000 citizens are now enjoying a street lighting system said to be 20 times more brilliant than before.

On the main traffic streets, 117 lamps of 1,000 candlepower were installed, replacing 54 lamps with an average output of only 250 candlepower. The mounting height was raised from 18 to 25 feet, making the illumination more effective. It has been estimated that the new lighting distributes 7,000 candlepower per block.

In the residential district, there are 483 lamps of 250 candlepower. Of these, 90 lighting units were recently installed. Among the 393 already located, the output of 235 of them was increased from 100 to 250 candlepower. Ten lamps of 400 candlepower are in use at the railway crossings, where new fixtures have doubled the amount of illumination.

The extensive street lighting improvements were put in and paid for by the Kansas Gas and Electric Company under a new street lighting rate in which the company owns the fixtures and maintains them.

Modern Street Lights Wanted In South African Towns

SOME of our cities and larger towns have more road accidents between 7 and 8 p.m. than they do at any other time during the 24-hour period. The difficulty of traffic control after sundown, the prevalence of drunkenness at night, and poor visibility are the basic causes for this record.

When the Association of Public Lighting Engineers met in London several months ago, Edward Fryer described the discrepancies he had observed in street lighting in England. They are as follows:

1. The lack of uniformity is the first characteristic. With bewildering rapidity, the driver passes from one type of lighting to another of varying color, intensity, and height, each giving a different effect. At one time, the motorist feels secure in driving at normal speed without headlights, and then, within a few hundred yards, he has to switch them on again. This causes confusion and uncertainty.

2. The motorist expects a standard of street lighting which will enable him to drive at normal speeds at night without the use of headlights, with the same confidence he has during the day. This means the elimination of shadows and dazzle.

3. The illumination of background is sometimes neglected. The surface of the roadway might be eliminated to the exclusion of foot-paths, flanking buildings, road junctions, etc.

4. The elimination of distracting lights is an important requirement. An advertisement light or display light must not attract to the point of distraction.

What Mr. Fryer had to say in connection with street lighting in Britain may be applied to the street-lighting installations in South Africa. Very few of its cities or towns can boast of really adequate street lighting. In comparison with standards set by many European and American cities, they are conspicuously bad.

A fairly common rule, it would seem, is to provide good lighting on a few main streets in the business area, while suburban streets are neglected. There are far too many streets in the Union where there are little pools of light beneath each lamp post and long stretches of darkness between each pool. There are far too many streets in complete darkness.

Some think it is not essential to provide adequate lighting on "not-so-important" streets, because motorists can depend on their headlights when motoring outside business areas. But the lighting on such streets is often so bad that the driver is compelled to use his headlights at maximum strength, thus impairing the vision of anyone driving in the opposite direction. Headlight glare is dangerous. Local authorities who are interested in checking the rising accident rate should provide lighting of a quality that will obviate the use of headlights as much as possible.

Crime Flourishes in the Dark

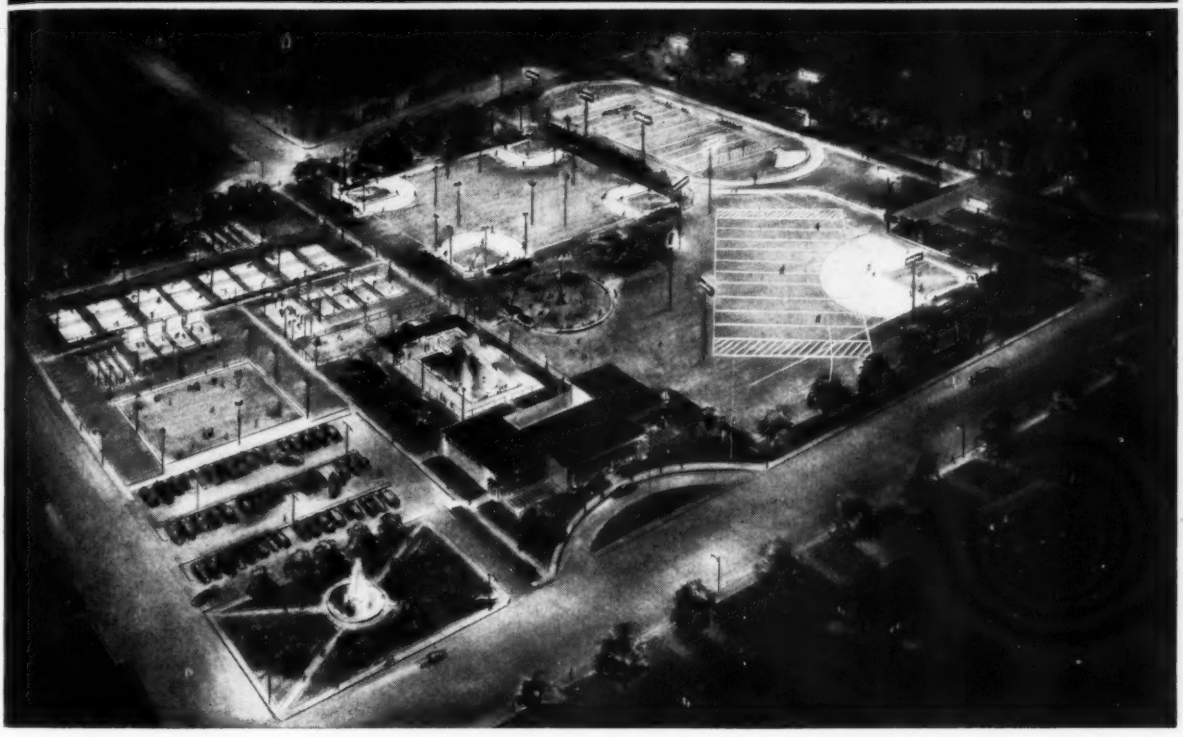
The ill effects of bad street lighting extend to the crime rate just as much as they do the accident rate. Badly lighted streets provide a happy hunting ground for housebreaking, mashing, property-damaging, assault, rape, and many other types of crimes.

Police officials in many United States towns and cities have proclaimed a remarkable fall in crime with street-lighting improvements. Apart from the fact that criminals usually shun light, policing will be carried out more effectively if there is adequate street lighting.

South African municipal engineers have always shown themselves to be fully conversant with the latest technical developments overseas. Of the many difficulties they had to face during the recent war, lighting maintenance was not the least. Now that there is some sign of improvement in the supply situation, we can expect that our engineers will soon have on hand some of the latest and most modern street-lighting equipment that it is possible to obtain from the United States and Britain.

Condensed from an article in the July 1947 *South African Municipal Magazine.*

how modern floodlighting CAN DOUBLE THE USE of sports and play grounds



Just about the finest investment you can make, from the standpoint of public health and community prestige, is a well-planned, well-run recreation program. Just about the best way to make that program pay off in full is to floodlight your play grounds and sports areas for after-dark use.

Modern floodlighting often doubles the usefulness of recreation facilities. By adding to the hours of light, more games can be scheduled, more people can enjoy them after the working day. The investment is surprisingly small, considering the increased use of sports and play grounds that it brings.

SEND FOR THESE FREE BULLETINS

1) G.E. will supply without charge lighting plans for any sports area showing exactly how many floodlights are needed and where they should be placed. These are carefully designed to assure top-notch lighting with highest economy. Just tell us in the blank at the right what sport you're interested in.

2) In many cities today, organized recreation succeeds best where play grounds and sports fields are built together as a complete center. A new illustrated leaflet called "All Sports For All Ages" outlines the advantages of such a recreation center. It's yours by asking in the blank below for bulletin GEA-4759.

3) The new G-E Type L-69 floodlight, first choice of professional baseball and football clubs, will deliver maximum light to your play areas, give maximum service. Our bulletin GEA-4835 describes its many features. May we send you a copy?

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General Electric Company
Schenectady 5, N. Y.

USE THIS COUPON

Gentlemen:

Please send me the following literature:

- ☐ (1) Floodlighting plans for the following sport .....
- ☐ (2) A copy of Bulletin GEA-4759.
- ☐ (3) A copy of Bulletin GEA-4835.

Name .....

Title .....

Street & No. .....

City ..... Zone ..... State .....

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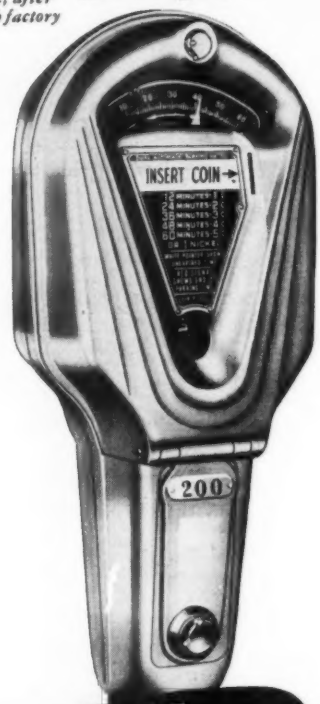

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CITIES have found Dual Automatic Parking Meters an ideal solution to traffic control problems. That's because—(1) Duals are made with finest quality materials and workmanship; and (2) because Duals are backed by unexcelled *service.*

Consider these Dual advantages: they're built like fine time-pieces—accurate, dependable, *weatherproof* and *tamper-proof;* meter setting works *automatically;* they're rugged and long-lasting.

And here's a *plus* value: to make sure Duals perform as well *after installation* as they do in exacting factory-tests, Dual maintains a complete Service Department, staffed by specialists. When Duals need occasional cleaning and servicing—like any fine time-piece—they get expert factory attention. Dual also maintains field inspections and factory-trains *your* personnel.

Long after Duals have paid for themselves, they provide a steady income that can be used to help solve other traffic control problems. Write for complete information—let Dual "wrap up" *your* traffic control problems.

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WHEN IT COMES TO CONTROLLING PARKING YOU CAN DO IT BETTER WITH **DUALS**

Recent City Manager Appointments

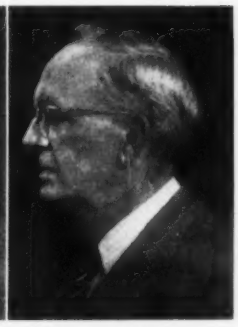
The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City*.

M. W. Slankard
Roseburg, Ore.

R. S. Braden
Raleigh, N. C.

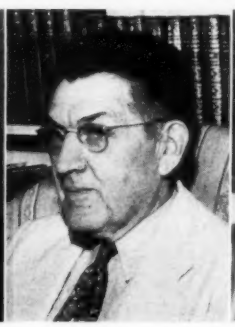
J. R. Ficklin
Petaluma, Calif.

C. S. Fox
Mechanicsburg, Pa.

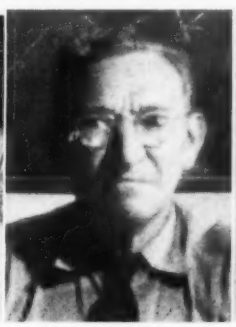


W. Bartholomew
Jacksonville Beach, Fla.

P. H. Beauvais
Allegon, Mich.

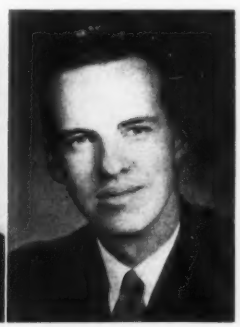


J. R. Townsend
Greensboro, N. C.



W. I. McGhee
Pearisburg, Va.

W. C. Hyde
Albert Lea, Minn.



H. A. Storey
Lynwood, Calif.

E. R. BANCROFT is the first manager of Canon City, Colo.

E. B. BOHANNON has been appointed county manager of McMinn County, Tenn.

EMORY BRANCH, commercial director, Puget Sound Power and Light Co., Seattle, Wash., has been appointed first manager of Reno, Nevada.

CHARLES C. BROWN, former city engineer and acting manager, received full appointment as manager of Dover, Del.

C. HAL BRUES, utility executive, is city manager of Wheeling, West Va., following the resignation of William A. Hannig.

NICHOLAS A. COLASANTO, a local attorney, has been appointed city manager of Alexandria, Va.

GEORGE CUFF, councilman, has been appointed town and village manager of Windsor, Vermont, succeeding Vail O. Leach.

RICHARD H. CUSTER, manager of Fort Fairfield, Maine, since February 1946, has been appointed first manager of Windsor, Conn.

CONRAD L. DRAPEAU, selectman of Brunswick, Maine, has been appointed town manager of Bridgton, Maine.

JAMES W. FLINT, manager of Yale, Okla., 1927-29; Cushing, Okla., since 1925, has been appointed manager of Ada, Okla.

LEOPOLD GARON is first city manager of Rimouski, Quebec.

GEORGE GRANGER, manager of Grayling, Mich., since June 1936, has been appointed manager of Big Rapids, Mich.

WILLIAM E. HANSEN, manager of Monterey, Calif., 1944-46; Ada, Okla., since October 1946, has been appointed first manager of Hannibal, Mo.

EARL HELLENE, city manager for the past 30 years, has been appointed manager of Atchison, Kansas.

L. D. JAMES, city clerk of Roanoke, Va., has been appointed city manager of Hampton, Va.

A. J. KOENIG, manager of Plymouth, Mich., 1928-31; Fort Atkinson, Wis., 1931-38; Wilmette, Ill., 1938-40; Jackson, Mich., 1942-46; Anchorage, Alaska, 1946-47; has been appointed first manager of Milford, Conn.

ROBERT MCCURDY is acting manager of Pasadena, Calif., following the resignation of HAROLD HINES, who has accepted a position with the *Long Beach Press-Telegram* and *Pasadena Star-News*.

N. V. MOSS has received the full appointment as city manager of Amarillo, Texas.

ARTHUR S. OWENS, manager of Portsmouth, Va., since April 1942, has been appointed city manager of Roanoke, Va., effective January 1, 1948. He succeeds WILLIAM P. HUNTER, who is retiring after 29 years of manager service.

ROBERT L. PRICE, manager of Blairsville, Pa., since October 1946, has been appointed town manager of Houlton, Maine.

GEORGE J. ROARK, manager of Beaumont, Texas, 1920-23, Pensacola, Fla., 1931 to June 1947, has been appointed first manager of Augusta, Ga., effective January 5, 1948.

DEWITT L. SPINKS, a local man, has been appointed city manager of Lakeland, Fla. CHARLES LARSEN, manager from 1931 to 1939 and from 1943 to date, will continue as superintendent of the water and light plant.

C. F. TRINKLE of Lawrence, Kansas, has been appointed first manager of Tillamook, Ore.

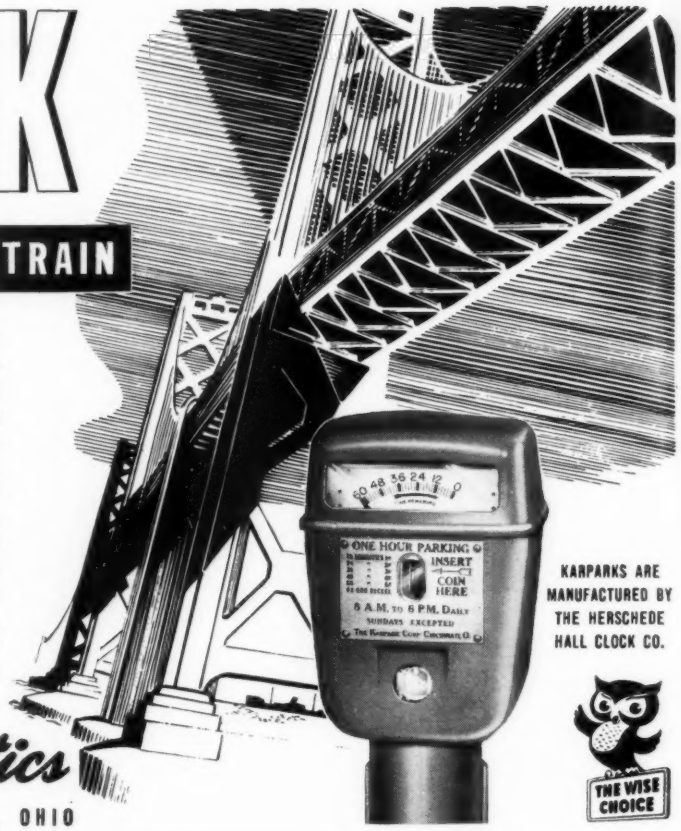
GEORGE H. WADDELL, town treasurer since 1916, has been appointed first manager of Manchester, Conn.

CLARENCE E. RIDLEY
Executive Director
International City Managers Association
Chicago, Ill.

KARPARK

MADE TO STAND THE STRAIN

One of the biggest victories in the never ending struggle for better traffic is the giant bridge. It's a marvel of engineering, colossal in its strength. It has to be, to bear the weight and motion of traffic and to stand the violence of nature. For the same reason—to defy heat, cold, wind, rain and snow — the KARPARK is designed and built for extra rugged strength, from accurate corrosion resisting escapement to doubly strong standard. That is why the KARPARK is so successful and dependable in bridging the way to better parking control. To have all the facts about KARPARK'S easy automatic operation, easy enforcement and the profit it produces, write today.



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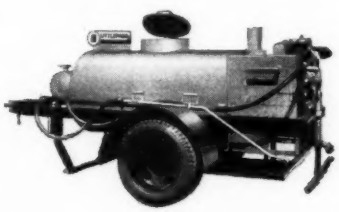
KARPARK *Automatics*

KARPARK CORPORATION, CINCINNATI 6, OHIO

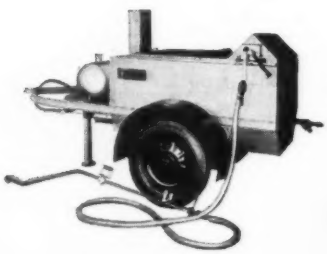
A Patch in Time Saves Nine . . .

USE LITTLEFORD FOR ROAD REPAIRS

Holes in black top are as inevitable as winter, and the best and cheapest way is to get on them quickly with the finest repair equipment anywhere available — Littleford. Put Littleford's Trail-O-Roller on patch work and the holes will soon disappear. For this compact little number is motorized and portable, converts from rolling to traveling, or back, in two minutes; trails as fast as you drive a truck; compaction as great as five ton tandem! *There's* efficiency! Combine that with Littleford heating Kettle and 101 Utility Spray Tank, and you're ready for the toughest road job that winter can throw at anybody!



Littleford 101 Utility Spray Tank is combination of three units: Spray bar for spraying, hand spray for patch work, pouring pot outlet for filling cracks.



Littleford 84-HD is fastest heating kettle made; double heat circulation and screened reservoir. These patented features give fast, efficient, economical operation.

LITTLEFORD

LITTLEFORD BROS., Inc.

500 E. PEARL ST., CINCINNATI 2, OHIO

Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

Jan. 10-11—Chicago, Ill.
AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (La Salle Hotel). Exec. Sec., Draveaux Bender, MIT, Room 7-335, 11 Massachusetts Ave., Cambridge 39, Mass.

Jan. 20—New York, N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. Annual Winter Meeting (Commodore Hotel). Sec.-Treas., R. K. Blanchard, 50 West 50th St., New York, N. Y.

***Jan. 23-24—New York, N. Y.**
NEW YORK STATE SEWAGE WORKS ASSOCIATION. Annual Meeting (Hotel Pennsylvania). Sec., Arthur T. Clark, Water and Sewage Works Manufacturers Association, Inc., 170 Broadway, New York 7, N. Y.

Feb. 8-12—College Station, Texas
TEXAS WATER WORKS AND SEWERAGE SHORT SCHOOL (Texas A. & M. College). Exec. Sec., U. M. Ehlers, Director, Bureau of Sanitary Engineering, State Department of Health, Austin, Texas.

Feb. 15-19—Chicago, Ill.
ASSOCIATED EQUIPMENT DISTRIBUTORS. Annual Meeting (Edgewater Beach Hotel). Exec. Sec., Frank C. Knight, 360 N. Michigan Ave., Chicago, Ill.

***Feb. 16-18—New York, N. Y.**
UNITED STATES CONFERENCE OF MAYORS. Annual Conference (Waldorf-Astoria Hotel). Exec. Dir., Paul V. Betters, 730 Jackson Place, Washington 6, D. C.

***Feb. 24-26—Grand Rapids, Mich.**
MICHIGAN HIGHWAY CONFERENCE. Annual Meeting (Pantlind Hotel). Chairman, R. L. Morrison, University of Michigan, Ann Arbor, Mich..

March 3-5—Atlantic City, N. J.
ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES. Annual Meeting (Traymore Hotel). Sec.-Treas., A. Lee Grover, Secretary State Highway Dept., Trenton, N. J.

March 11-13—New Orleans, La.
AMERICAN CONCRETE PIPE ASSOCIATION. Annual Meeting (The Roosevelt). Mng. Dir., Howard F. Peckworth, 228 N. La Salle St., Chicago, Ill.

***April 1-2—Syracuse, N. Y.**
AMERICAN WATER WORKS ASSOCIATION—New York Section. Spring Meeting (Hotel Syracuse). Sec.-Treas., R. K. Blanchard, 50 W. 50th St., New York, N. Y.

April 7-9—Chicago, Ill.
MIDWEST POWER CONFERENCE. Annual Meeting (Sheraton Hotel). Sec., E. R. Whitehead, Illinois Institute of Technology, 3300 Federal St., Chicago 16, Ill.

***April 8—Livingston, Mont.**
MONTANA SEWAGE WORKS ASSOCIATION. Annual Meeting (City Auditorium). Exec. Sec., H. B. Foote, Division of Sanitary Engineering, Helena, Mont.

***April 14-17—Atlantic City, N. J.**
COMMUNITY CHESTS AND COUNCILS, INC. Annual Meeting (Ambassador Hotel). Exec. Dir., Ralph Blanchard, 155 E. 44th St., New York 17, N. Y.

***April 17-23—Atlantic City, N. J.**
NATIONAL COUNCIL OF SOCIAL WORK. Annual Meeting (Ambassador Hotel). Acting Exec. Sec., Jane Chandler, 82 N. High St., Columbus 15, Ohio.

April 28-30—St. Louis, Mo.
MISSOURI ASSOCIATION OF PUBLIC UTILITIES. Annual Meeting (Hotel Jefferson). General Counsel, William H. Allen, Merchants Bank Bldg., 101 West High St., Jefferson City, Mo.

May 3-7—Atlantic City, N. J.
AMERICAN WATER WORKS ASSOCIATION. Annual Meeting (Convention Hall). Sec., Harry E. Jordan, 500 Fifth Ave., New York, N. Y.

***May 17-19—Newark, N. J.**
AMERICAN PLANNING AND CIVIC ASSOCIATION. Annual Meeting (Essex House). Exec. Sec., Harlean James, 901 Union Trust Bldg., Washington 5, D. C.

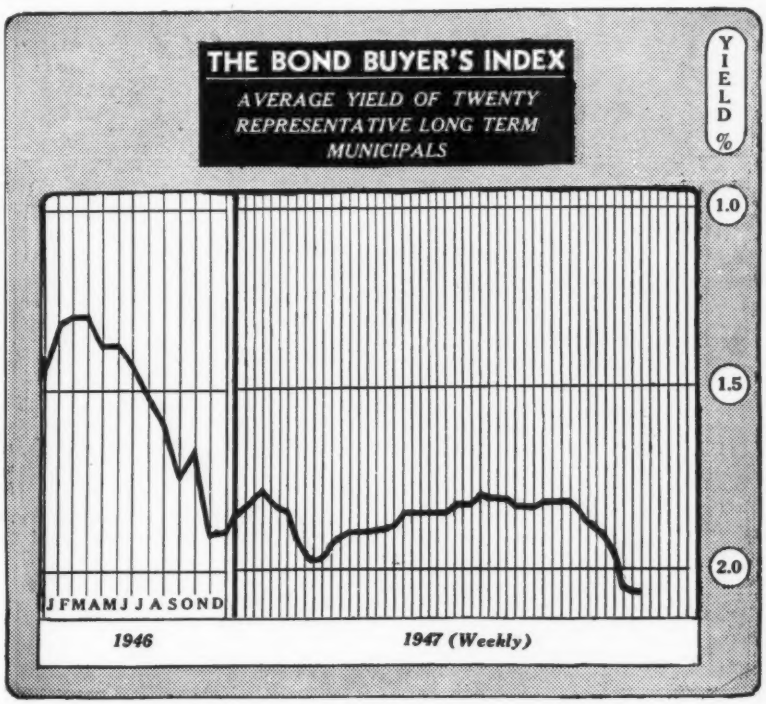
***June 21-25—Salt Lake City, Utah**
THE AMERICAN INSTITUTE OF ARCHITECTS. Annual Convention (Hotel Utah). Exec. Dir., Edward C. Kemper, 1741 New York Ave., NW., Washington 6, D. C.

***July 16-24—Chicago, Ill.**
AMERICAN ROAD BUILDERS ASSOCIATION. Road Show, Soldier Field. Engr. Dir., Charles M. Upham, 1319 F St., NW., Washington 4, D. C.

***Sept. 14-15—Manitoba, Canada**
AMERICAN WATER WORKS ASSOCIATION—Minnesota Section. Annual Conference (Royal Alexandra Hotel). Sec.-Treas., R. M. Finch, 416 Flour Exchange, Minneapolis 15, Minn.

This Month's Cover

Our front cover is a reproduction of a painting by Fireman Edward J. Brady, assistant editor of the New York Fire Department's magazine *WYNF*. It will be used as this year's Christmas card of the uniformed force of the N.Y.F.D. Graduating from Cooper Union in Architecture (nights) in 1936, Mr. Brady wisely continued at his Consolidated Edison job until 1938, when he sought and found advancement in the Fire Department. He thought his cover idea should be worked out by Norman Rockwell but, like a good fireman, he did it himself.



From *The Bond Buyer* for November 22, 1947.

The Municipal Bond Market

Some sales of new issues reported in recent numbers of *The Bond Buyer*:

Amount	* *Borrower and Purpose*	*Rate (%)*	*Term (Years)*	*Basis (%)*
60,000	Webster, Mass., Bath House	1.50	1-10 Ser.	1.32
13,000	Redwood Falls, Minn., Water and Sewer	1.75	2 Avg.	1.65
60,000	Le Center, Minn., General Obligation	1.75	4.5/10.5 O.-A.	1.73
300,000	Bellevue, Pa., Recreation Center Construction	1.875	1-30 Ser.	1.751
90,000	Wilmington, Ohio, Sewer	2	12.16 Avg.	1.79
398,000	New Brunswick, N. J., Water	2.10	10.5 Avg.	2.02
20,000	Cabool, Mo., Public Park	2.25	10.25 Avg.	2.076
60,000	Carrollton, Ohio, Municipal Building	2.25	7.75/10.5 O.-A.	2.001
100,000	New Boston, Ohio, Flood Wall	2.50	17.5 Avg.	2.477

for Birmingham

On April 30, 1947 the Birmingham Electric Company converted the Norwood-11th Avenue line from street car to trolley coach service. This marked the first step in a transit modernization program which, when completed, will include the purchase of 148 trolley coaches for the conversion of nine street car and two motor bus lines to modern, rubber-tired electric operation. Moreover, trolley coaches will be used to furnish local service on two of the system's proposed PCC car express lines.*

Although the purchase of 48 PCC cars and 114 motor buses was also included in the overall modernization plan, trolley coaches were selected to furnish the backbone of the city's transportation system. One reason why they were selected is that, after having made studies of several other cities' operations, the management found that trolley coaches were ideal for main line service and were efficient and economical to operate. Another reason is that THE PUBLIC LIKES THEM.

* Ohio Brass overhead fittings and current collection equipment are being used on Birmingham's new trolley coach system.

TROLLEY COACH AND STREET CAR
Ohio Brass
MATERIAL AND CAR EQUIPMENT

MANSFIELD, OHIO

CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONTARIO

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Municipal and Civic Publications

Neighborhood Unit Concept

THE NEIGHBORHOOD UNIT PLAN: ITS SPREAD AND ACCEPTANCE—*Compiled by James Dahir. Russell Sage Foundation, 130 E. 22nd St., New York 10, N. Y. 1947. 91 pp. $1.00.*

A useful selected bibliography of more than 200 titles, this conscientious study constitutes a rough measurement of the extent to which the neighborhood unit planning concept has been accepted. The neighborhood unit idea was first fully described by Clarence Arthur Perry in 1929, in a monograph published by the Russell Sage Foundation entitled "The Neighborhood Unit, A Scheme of Arrangement for the Family-Life Community."

Since then a vast body of literature has been published about the idea—though, until Mr. Dahir's present compilation, it has been difficult to evaluate and interpret the material. Sources have been scattered in a wide variety of publications. This new study should aid in the consolidation of thought and the further promotion of neighborhood planning.

The report will be found especially valuable for ready reference purposes because of the way that the key ideas from the many publications listed have been digested and set forth in a readable and interesting manner.

Citizen Research in Government

THE PAST AND PRESENT AS SPRINGBOARDS TO THE FUTURE—*Governmental Research Association, 30 Rockefeller Plaza, New York 20, N. Y. October 1947. 31 pp.*

Four of the leaders of the governmental research movement in this country, Lent D. Upson, Carter W. Atkins, Luther Gulick, and John F. Sly, have each contributed brief, thought-provoking statements for this pamphlet about the past, present, and future directions and needs in this vital field.

The growth of the movement since the establishment in 1907 of the Bureau of Municipal Research (now the Institute of Public Administration) is traced. The major policy questions that will have to be determined through citizen agency research in government are pointed out. Apparent throughout the publication is the extent of the aid which can be furnished municipal officials through using citizens' research organizations.

Toll Bridge Study

TOLL BRIDGE INFLUENCE OF HIGHWAY TRAFFIC OPERATION—*By M. Earl Campbell. Bureau of Highway Traffic, Yale University, New Haven, Conn. 1947. 112 pp.*

This scholarly research report, published with funds made available by the Eno Foundation, poses the question "Are toll bridges warranted?" It traces the history of toll development, and also develops a mathematical basis for measuring the effect of the toll system on traffic operation, presenting and interpreting some recent field studies. The report shows, for example, that the average American motorist values his time at from seven-tenths of a cent to more than one and one-quarter cents per minute for the privilege of using toll bridges and highways which can save him time.

Assessing Discussions

PROCEEDINGS OF THE SHORT COURSE FOR MUNICIPAL ASSESSING OFFICERS, held at the *University of Michigan, January 29, 30, and 31, 1947—Copies obtainable from the Extension Service, University of Michigan. 93 pp. $1.00.*

Discussions of assessment methods and procedures are contained in this compilation of the proceedings of the Michigan meetings. A seven-page "reference shelf" for assessors should be found of general value to assessors in other municipalities.

Asphalt Paving Specifications

CONSTRUCTION SPECIFICATIONS—*The Asphalt Institute, 801 Second Ave., New York 17, N. Y. 1947. 303 pages. Copies free upon request by engineers and officials concerned with asphalt problems.*

The Asphalt Institute again places before the field a revision of its valuable set of asphalt construction specifications. They replace those contained in the previous edition dated May 1, 1947. The new edition, in addition to sections on surface treatment, road mix, penetration macadam, base courses, hot- and cold-laid plant-mix, and asphalt-block pavement, devotes a special preliminary section to the asphalt priming of granular base courses. It is prepared in the usual convenient form that permits an engineer to call for these specifications in his own proposals if he wishes.

Appraisers' Manual

APPRAISERS' MANUAL, 1947—*Written and Published by J. M. Cleminshaw Company, Appraisal Engineers, Union Commerce Building, Cleveland, Ohio. 241 pp. $5.00.*

The manual is a simple and reliable practical guide for the use of the non-professional appraiser. It points out that construction costs have risen about 56% since 1940. The book should be of real service to those who must know where costs and values stand today. Tables are presented which show material and labor costs, depreciation rules, land-value rules, comparative construction costs among different cities, etc.

Figures used in the book are based upon "a reasonably good flow of materials and fair labor efficiency as of December 1946 in Cleveland, Ohio." It is possible that in some localities there may have been considerable variations in the construction pattern since then, but, in general, the book should prove a sound guide for any appraisal work which municipal city officials may be called upon to do.

Housing and Recreation

"THERE ARE NO STRANGERS HERE." HOUSING AND RECREATION JOIN HANDS—*Compiled by Alta Sims Bunker. Copies available from Secretary, San Francisco Recreation Commission, 370 City Hall, San Francisco, Calif. 23 pp.*

The recent shift of population to the West Coast burdened San Francisco with problems of inadequate housing and recreational services. As a result of cooperative agreements between the Housing Authority and the Recreation Commission, an impressive list of activity programs and facilities has been made available to housing development inhabitants.

Although the report makes it clear that the relationship between housing and recreation is highly experimental and in its early stages, other municipalities can learn much from reviewing San Francisco's experience in this field.

Zoning Boards of Adjustment

DUTIES AND POWERS OF ZONING BOARDS OF ADJUSTMENT IN BERGEN COUNTY—*Prepared for County Planning Board by C. Earl Morrow, Consultant, Regional Plan Association, Inc., Hackensack, N. J. 1947. Mimeo. 33 pp.*

The purpose of the report is to state the functions of a board of adjustment, many of which are not sufficiently well defined in the local ordinances. State enabling legislation permitting municipalities to enact zoning ordinances is quoted in Appendix I, and a number of court cases are cited in Appendix II relating to the subject matter of the report.

The foreword declares that the greatest single deficiency of zoning ordinances is caused by the fact that they are not based on a thoroughly studied master plan. The importance of proper administration of a zoning ordinance is also emphasized.

Port Authorities

PORT AUTHORITIES—State Government magazine for September 1947. *Available from Council of State Governments, 1313 E. 60th St., Chicago 37, Ill. 24 pp. 50 cents per copy.*

Articles describing the history, organization, and activities of several port authority agencies, including those of New York, Alabama, Georgia, New Orleans, and several Atlantic ports make up the contents of this issue. The point is made that there are certain functions essential to the health and prosperity of our society that cannot for various reasons be as effectively performed by private resources as by public authority. Port authorities have been a most significant aid to transportation in the urban areas in which they have operated.

U. S. Housing

HOUSING CHARACTERISTICS OF THE UNITED STATES—*April, 1947—Current Population Reports: Housing, Bureau of the Census, Washington 25, D. C. Series P-70, No. 1. October, 1947. 20 pp.*

The 1947 estimates presented in this report are based on data obtained in connection with the Census Bureau's Survey of Population, Labor Force, and Housing conducted in April 1947. This survey consisted of about 30,000 households situated in 148 sample areas in 44 States and the District of Columbia.

The survey indicated that the extent of overcrowding, as measured by the proportion of dwelling units with more than 1½ persons per room, was approximately 6%, or about 2,400,000 occupied dwelling units. Data are given on tenure, state of repair, size of household, monthly rent, veteran households, and vacancy, as well as a number of other housing characteristics for the four major regional areas and for the nation as a whole.

The Precinct Captain

COGWHEELS OF DEMOCRACY. A STUDY OF THE PRECINCT CAPTAIN—*By Sonya Forthal, Ph.D., The William-Frederick Press, 313 W. 35th St., New York 1, N. Y. 1946. 106 pp. $2.00.*

This book shows clearly, in its presentation of case studies of individual precinct captains, that government is a human contrivance whose operation and achievement can never rise above the moral and economic level of the men who influence it.

The book shows also that many party workers appeal for votes not on the basis of the merits of their party, but on the basis of sympathy for themselves or the potential services which their party can render locally and individually.

The author believes that the tragedy of our democracy is that indifferent citizens without strong political convictions may be influenced by such arguments, and that these votes furnish the foundations of some of the so-called party "machines."

A Texas City Budget

THE ANNUAL BUDGET OF THE CITY OF PELLY, TEXAS, 1948—*As adopted by the Mayor and City Commission. Compiled by Bill N. Taylor, city manager. Mimeo. 64 pp.*

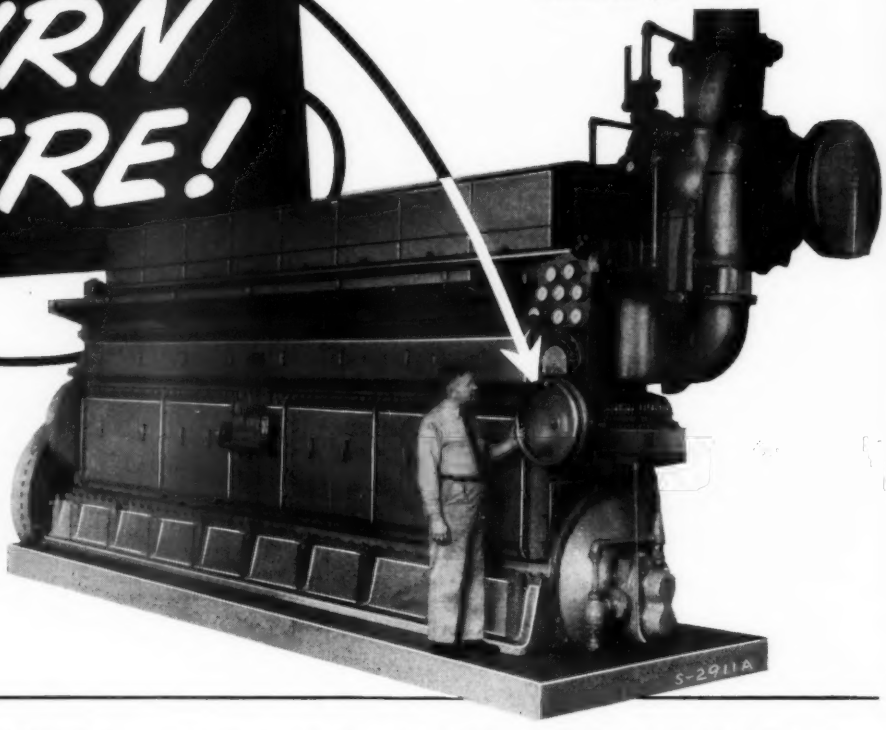
Once past the austere cover of this report, almost any small municipality can learn some new methods for reporting fiscal facts.

The statistics are all there, and they are imposing enough. But it is the city manager's budget message in Part I of the report, aimed at stimulating the citizens of Pelly into action, that is of special interest. The cold diagnosis of the financial problems of Pelly (a consolidation of Baytown, Goose Creek and Pelly) minces no words and should serve as a considerable jolt to any complacency that may have existed in the community. The budget is offered as a first step toward the straightening out of the city's financial administration.

XUM

TURN HERE!

A Worthington Dual Fuel Diesel Engine, Turbo-Charged



FOR THE POWER YOU NEED

WITH THE FUEL YOU HAVE

Worthington Dual Fuel Diesel Engines in your sewage plant deliver unfailing power—no matter how "temperamental" your gas supply may be. A single turn of the control wheel provides oil, gas, or oil-and-gas in any ratio. And when gas pressure drops too low, these versatile engines shift to oil *automatically*—a feature unequalled for simplicity, positive action and easy adjustment.

ECONOMY ALL THE WAY

Operating on two of the cheapest fuels — sewage gas and Diesel oil — Worthington Dual Fuel Diesels cut power costs still further by eliminating expensive stand-by equipment and power purchased outside. Add their outstanding thermal efficiency on either fuel and you have savings in every detail of operation.

AS BLOWER DRIVES, GENERATORS, PUMPING UNITS, ETC.

Foremost in every step of Dual Fuel Diesel development, Worthington offers these units in sizes from 225 to 2470 hp, covering the range of sewage plant applications. For further proof that *there's more worth in Worthington*, write to *Worthington Pump and Machinery Corporation, Engine Division, Buffalo, N.Y.*

WORTHINGTON

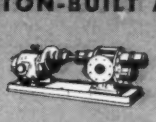
E7-8

YOUR PARTNER IN POWER PROGRESS

Diesel engines, 150 to 2,640 hp . . . gas engines, 175 to 2,470 hp . . . . dual fuel engines, 225 to 2,470 hp.

WORTHINGTON-BUILT AUXILIARIES

Air King Compressors


Oil Transfer Pumps

Cooling Water Circulating Pumps

Evaporative Type Engine Water Cooler

Tax-Delinquent Land Study

TAX-DELINQUENT VACANT URBAN LAND—*American Municipal Association, 1313 E. 60th St., Chicago 37, Ill. Report No. 163. Sept., 1947. Mimeo.* 18 *pp.* $1.00.

Eiguty-four cities contributed information to the survey on which the report is based. It was undertaken to ascertain the extent to which cumbersome or expensive statutory procedures are handicapping local governments in acquiring title to tax-foreclosed lands and in the efficient administration of tax-reverted properties, and to collect data as to the supply of tax-delinquent lands now held by cities that might be available for housing.

The report concludes that municipal ownership of tax-delinquent property is no longer a major problem, because such holdings have generally been liquidated. It points out, however, that cities have been deficient in developing means and measures for land-use adjustments and tenure conducive to potentially better use of vacant parcels, and that a more comprehensive study of tax-foreclosure procedures should be made to formulate uniform statutes by the various states.

Overlapping Governmental Unit Study

GOVERNMENTAL UNITS OVERLYING CITY AREAS—*Bureau of the Census, Department of Commerce, Washington 25, D. C. Governmental Organization No. 3. October, 1947. 55 pp.*

This useful experimental report provides information regarding the complex pattern of local-government structure and functional responsibility within the 397 city areas listed as having over 25,000 population in the 1940 census. The report points out that there are marked variations among these city areas in the extent of local government "layering" and in the distribution of responsibility to particular types of units for performing public services.

These variations hamper comparative appraisal of governmental structure and finances in different urban areas, according to the report. It states that the 1,598 local-government units serving the 397 city areas considerably outweigh, financially, all the remaining 153,469 local governments in the United States.

The report should prove valuable to those interested in municipal research and in accurate inter-city comparisons of the cost of particular governmental functions.

Parking in Pennsylvania

OFF-STREET PARKING IN PENNSYLVANIA MUNICIPALITIES—*Institute of Local Government, Pennsylvania State College, State College, Pa.* 1947. 53 *pp.* $1.00.

The booklet has been prepared to bring out the individual interests and responsibilities within Pennsylvania communities about the parking problem and to re-emphasize the fact that both local government, private enterprise, and the community at large have much to do and to gain in the achievement of a lasting solution. The booklet points out that there is no panacea common to all municipalities, and that each has its own variable conditions, interests, personalities, and leadership.

Of special interest are the two appendices: one contains a list of possibilities for municipal and private action; the other is a table of individual municipalities showing the activities in each with regard to parking.

Airfield Construction

MANUAL ON AIRFIELDS—*The Asphalt Institute, 801 Second Ave., New York 17, N. Y.* 1947. 125 *pp. Copies free to engineers and other officials concerned with airport construction and development.*

This manual presents recommendations for the use of asphalt in construction, maintenance, and improvement of airfield surfaces. It discusses runway lengths for small, medium, and large planes; take-off and landing limitations; drainage problems; and frost factors. It also gives specific, easily applied design details for the surfacing. The text is well documented with tables relating to design factors.

Tennessee's Local Planning

LOCAL PLANNING IN TENNESSEE, 1946-47—*Tennessee State Planning Commission, 432 Sixth Ave., North, Nashville 3, Tenn. 61 pp. Copies may be obtained without cost from the Librarian of the Commission.*

An excellent, well-written report which describes the unique program of state assistance to local planning commissions developed in Tennessee. The report discusses some of the accomplishments of the 82 legally established local planning commissions in the state, and contains sketches and illustrations of some of the current projects and studies that are under way.

Also included in the report are a typical ordinance creating a planning commission, a typical local planning assistance agreement, a list of the Commission's publications relating to local planning, a list illustrating typical materials prepared for individual communities, and a list of local planning commissions with date of establishment and the names of the members of each commission.

Non-Profit Housing

NON-PROFIT HOUSING PROJECTS IN THE UNITED STATES—*Bureau of Labor Statistics, U. S. Department of Labor. Bulletin No. 896. For sale by U. S. Government Printing Office, Washington 25, D. C.* 1947. 91 *pp.* 25 *cents.*

Twenty non-profit housing projects in which self-help or cooperative methods were used are described in this publication. The report is a revision of an earlier one, now long out of print, with additional material on late developments and procedures selected as representative of varying methods of sponsorship, of techniques of financing, or because they illustrated mistakes to be avoided.

The case histories will be found useful and valuable because of the specific information they contain about all phases of each project's conception and development. A general review is also included as to the status of cooperative housing activity in this country, and its possibilities for future growth.

Traffic Opinion Poll

THE PUBLIC'S OPINION ON THE TRAFFIC PROBLEM, 1947—*Future Springfield, Inc., 304 Bookstore Building, Springfield 3, Mass.* 1947. 12 *pp.*

This report to the Mayor of Springfield contains the results of a direct mail poll of a representative cross-section of the registered voters in the city to obtain their opinions on the traffic problem. It showed clearly that the public was in favor of immediate action that would include such steps as the establishment of a separate traffic engineering department, headed by an experienced traffic engineer. The compilation of comments received as a result of the poll was also of value in revealing some of the public's major peeves on the traffic situation.

Municipal Engineer Income Study

INCOMES OF PROFESSIONAL ENGINEERS IN PUBLIC EMPLOYMENT—*by Arthur Richards, Director of Public Works, Larchmont, N. Y. Published by the American Association of Engineers, 8 S. Michigan Ave., Chicago 3, Ill.* 1947. 24 *pp.* $1.

A booklet designed to assist engineers and their employers to arrive at just and equitable agreements regarding salaries. It carries extensively prepared data that assist in classifying the various jobs of the engineer and it shows an equitable minimum salary for each position so outlined. The booklet is a continuation of studies made by this organization beginning in 1927. Its use of the "position" classification reduces the comparisons to a simple form that can be easily interpreted.

Summer Recreation

SUMMER RECREATION REPORT—CITY OF TOLEDO—*Division of Recreation, Department of Public Welfare.* 1947. *Mimeo.* 26 *pp.*

The report shows program participation and attendance figures, largest in the history of the Recreation Division, for the period from May 1, 1947, through September 15, 1947.

Planning and Housing Reports

CINCINNATI, OHIO—Recreation. An Analysis of Its Administration and Program of Activities, and Facilities Required. By the Planning Commission. 180 pp. $1.00.

EAST ORANGE, N. J.—A Capital Expenditure Program and Administrative Policy and Practice. By the City Planning Board. 1947. Charts. 24 pp.

TENNESSEE—Plant Location Directory of Basic Chemical Products. State Planning Commission, Industrial Development Division, Nashville. 1947. Mimeo. $1.00

SACRAMENTO, CALIF.—Planning Progress. Annual Report. 1945-1946. Glenn Hall, City Planning Engineer. Mimeo. 16 pp.

TENNESSEE—The FWA Planning Aid Program in Tennessee. 1945-1947. State Planning Commission, 432 Sixth Ave. N., Nashville 3. Tables. Mimeo. 20 pp.

WEST BATON ROUGE, LA.—West Baton Rouge Parish Resources and Facilities. Survey by the Planning Board. 1947. Charts. Illus. 94 pp.

WICHITA, KANS.—Revised Zoning Ordinance. 1946. C. C. Ellis, City Clerk. Maps. 35 pp.

Other Reports Received

CALIFORNIA—State and County Assessments of Tangible Property for 1947. State Board of Equalization, Division of Research and Statistics. Tables. Mimeo.

CINCINNATI, OHIO—Cincinnati Yearbook. 1947. The City Manager's Annual Report. Illus. 85 pp.

KANSAS CITY, MO.—Annual Report of the Director of Finance. 1947. R. F. Agard, Director. Tables. 93 pp.

KNOXVILLE, TENN.—Directory of Tennessee Municipal Officials. 1947. Bureau of Public Administration, University of Tennessee. Mimeo. 28 pp. $2.00.

LEXINGTON, KY.—Southern Manufacturers Tax Bill. Bulletin of the Bureau of Business Research, College of Commerce, University of Kentucky. No. 13. 1947. 88 pp.

LOS ANGELES, CALIF.—Organization, Administration and Management of Administrative Services of the City of Los Angeles. Part Four—Transportation Service. 1947. Charts. Mimeo. 42 pp.

LYNCHBURG, VA.—Annual Report of the City of Lynchburg. 1946. Charts. 62 pp.

NEW YORK, N. Y.—Annual Report of the Comptroller of the City of New York. 1946-1947. Lazarus Joseph, Comptroller. Tables. 465 pp.

State and Municipal Bonds Legal for Savings Banks in New York, Massachusetts and Connecticut. 1947. The Bond Buyer, 67 Pearl St. 21 pp.

PASADENA, CALIF.—Annual Report of the City Comptroller. 1947. O. A. Dietrich, Controller. Mimeo. Charts. 98 pp.

PELLY, TEXAS—Recommendations for the Improvement of the Tax Assessment Procedures. Bill Taylor, City Manager. Mimeo. 28 pp.

PHILADELPHIA, PA.—Something to Live For and Sing About. By Joseph Deitch. 1947. Philadelphia Recreation Association, 1427 Spruce St., 17 pp.

SAYREVILLE, N. J.—The Case for Sayreville, N. J. Joseph T. Karcher, Sayreville, N. J. Privately published. 1947. 28 pp.

SCHENECTADY, N. Y.—Your City Government. 1946. Arlen T. St. Louis, City Manager. Illus. 48 pp.

XUM

"1948" IT'S READY

Over 780 pages, giving names of City Officials, Maps and Population figures and Condensed Catalogs and listings of manufacturers of equipment and supplies for municipalities. This record-breaking 22nd Edition is now being distributed to 16,000 municipal officials throughout the country, who are interested in having close at hand illustrations and descriptions of the products of responsible manufacturers who want municipal business.

The Municipal Index

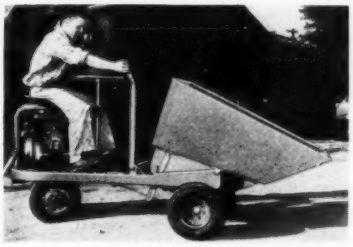
470 Fourth Avenue **New York 16, N. Y.**

News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

New Motorized Wheelbarrow

The new Whiteman Power Buggy, manufactured by the Whiteman Mfg. Co., Los Angeles 26, Calif., is a motorized wheelbarrow and dumptruck for hauling either wet or dry materials:



This Power Buggy has rear wheel drive and full 360° rotating drive mounting.

wet concrete, dirt, bricks, grain, ore, castings, tools.

A 6-hp, 4-cycle, air-cooled, gasoline-engine unit, the machine has a capacity of 2,000 pounds, or 12 cubic feet, and can travel, forward or in reverse, from 2 to 15 mph. Only 28 inches wide, the Power Buggy can go up a 25-degree ramp with a load and can turn on its own radius.

The machine may be obtained with either single wheels or dual wheels. Its light weight, plus its high maneuverability and narrow width, makes it useful for scaffold and upper-story work. The bucket height of 34 inches enables it to load at most concrete mixers without pit or platform.

Sewer Pipe Specifications Based on Uniform Performance

At the recent Ohio Conference on Sewage Treatment at Columbus, Ohio, Edward W. Hartman, engineer for the Clay Sewer Pipe Association, maintained that the development of a set of specifications for all sewer pipe which would be based on uniform performance in service would eventually give pipe users more value for their money, both in longer life of the pipe and reduced costs.

E. W. Hartman

Mr. Hartman pointed out that the problem of selecting a proper pipe material is really that of designing an efficient yardstick, or scale of values. He suggested that a yardstick for the final evaluation of the type of pipe for a specific job might include such scales as general usefulness, first cost, upkeep and maintenance, cost of installation, structural and hydraulic characteristics, and prospective life.

Concluding with the statement that the only major variables left were those of life expectancy and first cost, Mr. Hartman stated that if a vigorous comparison were constantly being made of various pipes as to these two factors, then competition would force producers to provide more values to the consumer in longer life and reduced first cost. Mr. Hartman argued that the designing engineer can bring this result about by conscientiously including both factors in his original specifications.

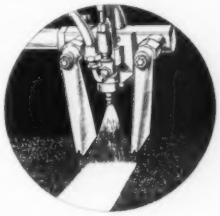
The Clay Sewer Pipe Association recently moved its Michigan office to 610 Eddy Bldg., Saginaw. Mr. C. J. Bauer, Jr., District Engineer of the Association, and its Michigan representative for the past 6½ years, will maintain his headquarters at the new address.

Kelly-Creswell Equipment Applies Traffic Lines

In the November issue of THE AMERICAN CITY, page 21, item 168, it was erroneously stated that part of the equipment of the Kelly-Creswell zone-marking machine was a brush. Actually, the edges of the lines are maintained by Kelly-Creswell Air-Curtains which do not come in contact with the surface of the pavement. Therefore, clean-cut and uniform lines can be applied to either a smooth or rough surface, at any speed.

A special striping gun, designed by the DeVilbiss Company, and manufactured exclusively for the Kelly-Creswell Co., Xenia, Ohio, produces a completely atomized, fan-shaped pattern with uniform cross distribution. An especially designed needle valve accurately and positively controls the film thickness and produces square-cut beginnings and endings. The width of the line is variable between 2 and 6 inches.

A countershaft, upon which are mounted Drive Rolls, which is actuated by compressed air, provides constant traction. A sensitive governor on the engine maintains constant speed up hill and down, reducing wobbling to a minimum. In traction, the rear wheels are locked together, making it easy to apply a straight line with Kelly-Creswell equipment.



The spray of zone-marking material is forced from a semi-internal spray gun, and Air-Curtains assure straight-edged lines over smooth or rough surfaces.

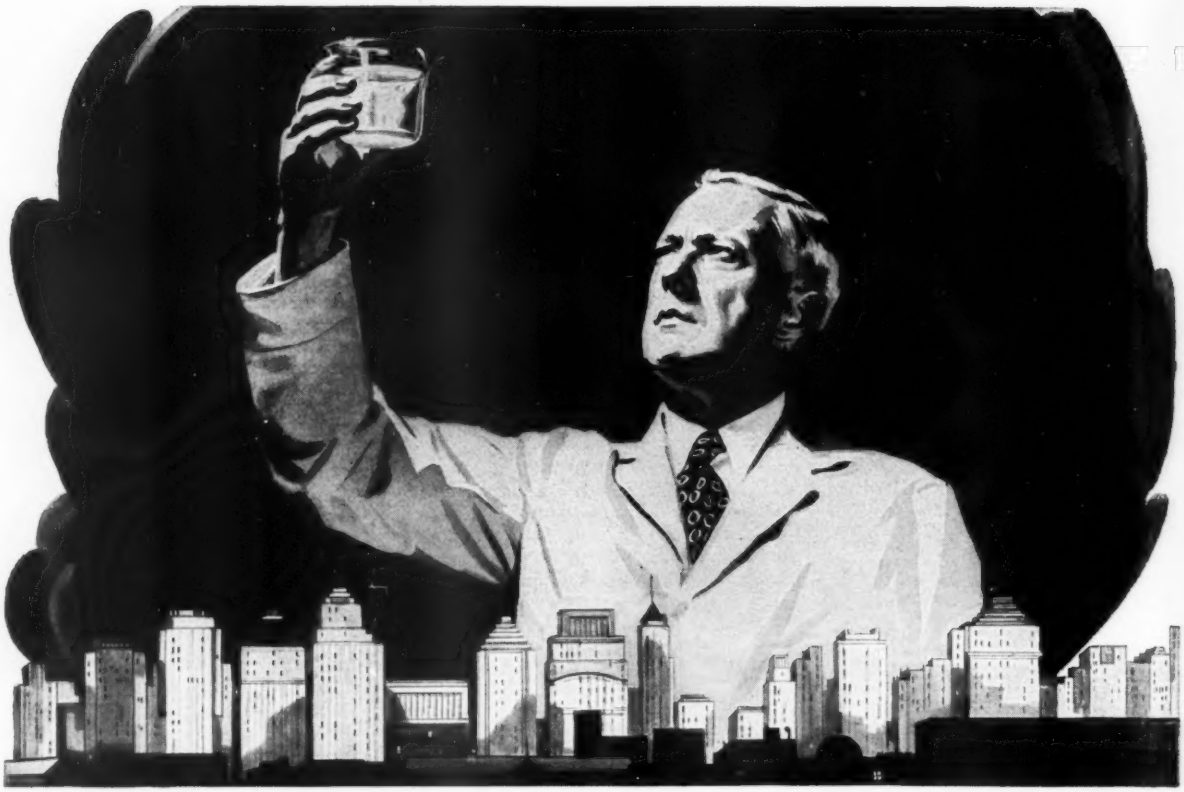
Vice-President Morrison of Warren Foundry & Pipe Dies

Mr. John H. Morrison, vice-president in charge of sales of Warren Foundry & Pipe Corp., 11 Broadway, New York, N. Y., died recently.

Mr. Morrison, who was 68, was born in Scotland and came to this country in 1901. He had been associated with the Warren Foundry & Pipe Corp. for the past 32 years, the last 17 years as vice-president in charge of sales.

Detroit Officials Inspect Pump Test

On their visit to the Worthington Pump & Machinery Corp., Harrison, N. J., plant to inspect tests of pumping equipment for the city of Detroit, officials of that city discussed the contract for Bluehill Storm Water Pumping Station units. Left to right: S. W. Kitson, manager, Worthington Public Works Div.; W. C. Rudd, mechanical engineer, Advance Placing Section; G. R. Thompson, city engineer; E. Jones, Commissioner of Public Works; T. Cruthers, vice-president of Worthington.



Solve your water problems with

Permutit

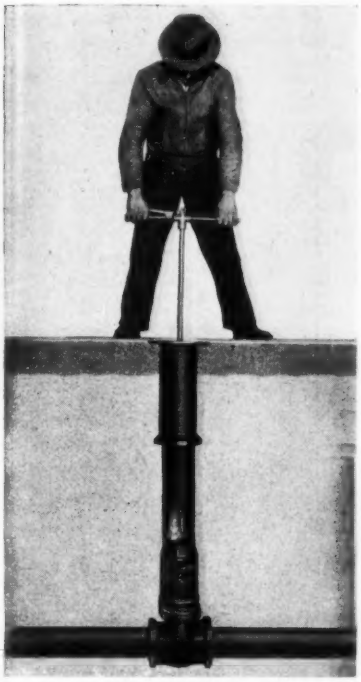
What kind of water does your city have? Is it *hard* . . . full of sediment . . . iron . . . or harmful impurities? Whatever your municipal water problem is, Permutit has the answer!

It's a known fact that Permutit has *successfully* solved all types of municipal water problems with efficient, economical water conditioning equipment!

Act on your water problems now! See that *your* city benefits from Permutit's years of experience and modern technology. Full information furnished, without obligation, to you and your consultants. Just write to The Permutit Company, Dept. A-12, 330 West 42nd St., New York 18, N. Y., or to The Permutit Company of Canada, Ltd., Montreal.

FOR 34 YEARS WATER CONDITIONING HEADQUARTERS

Curb and Valve Box Cleaner



In the operator's right hand may be seen the lever that adjusts the wing nut which manipulates the opening and closing of the jaws.

The Joseph G. Pollard Co., Inc., 141 Ashland Place, Brooklyn, N. Y., manufactures a mechanism for cleaning curb and valve boxes from the ground level. The instrument consists of a handle held in the operator's hands, blades extending to the part to be cleaned, and a slender rod that connects the two.

The jaws, or blades, are adjusted by a wing nut in the center of the handle; the blades are drop forged and can pick up stones, rubbish, and dirt. No. 5 curb and valve-box cleaners are 5 feet long and weigh 18 pounds; No. 6 are 6 feet long, weighing 20 pounds.

More Power to Police Cars

The Leece-Neville Co., Cleveland 14, Ohio, which for 38 years has largely confined its activities to the building of specialized electrical equipment for use in the automotive, aviation, marine, diesel, and stationary fields, will now make fractional horsepower D.C. motors. Output will be 4,000 D.C. motors a day and 5,000 A.C. motors a month.

S. Floyd Stewart, executive vice-president, emphasized that the program is an expansion, and that the custom-built field, in which the company has been a leader, will continue to be a dominant factor in Leece-Neville's operations. The latest development is an A.C. generating system using an alternator, suitable for use on all types of mobile equipment requiring high current output at all engine speeds.

Need for such a system originated with police departments. In cruisers carrying two-way radio, flasher lights, sirens, and other electrical accessories, ordinary generators are incapable of supplying enough current to maintain batteries. The 6-volt Leece-Neville system solved this problem, then was expanded to the 12-volt field, where it has been adapted to buses. The systems are now used on fire vehicles, taxicabs, private cars equipped with radio, two-way radio, and radio-telephone, ambulances, utility-company trucks, ships, and buses.

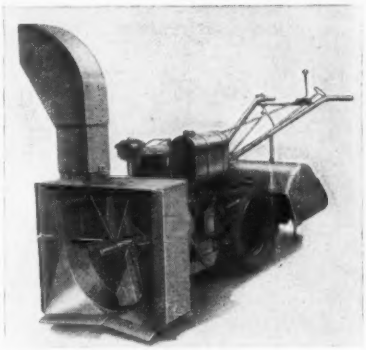
The 6-volt A.C. generating system includes alternator, voltage regulator, and dry-disc rectifier. It weighs 40 pounds. The alternator is of simplified design, having neither commutator nor rotating armature windings. Its chief advantage is delivery of 25 to 30 amperes at idling speeds, and 60 amperes from 12 to 15 mph to top speeds.

Because the average ignition specialist has hitherto confined his attention to D.C. equipment exclusively, preventive maintenance of the new A.C. system may pose for him a slight problem. Free information is available on the functional aspects of the system and on its maintenance.

Snow Plow Cleans Sidewalks

What is said to be a new and revolutionary rotary snow plow attachable to the "Ariens-Tiller" has been announced by the Ariens Co., Brillion, Wis. The plow not only removes snow from sidewalks, but may also be used in parks, driveways, etc.

The plow cuts a swath of 24 inches, discharging the snow to the right or left up to 18 feet from the path cleared. Equipped with anti-friction bearings, the plow has 4 blades and 23-inch rotor. It can be attached in 20 minutes to the "Ariens-Tiller" and has direct front-engine drive.



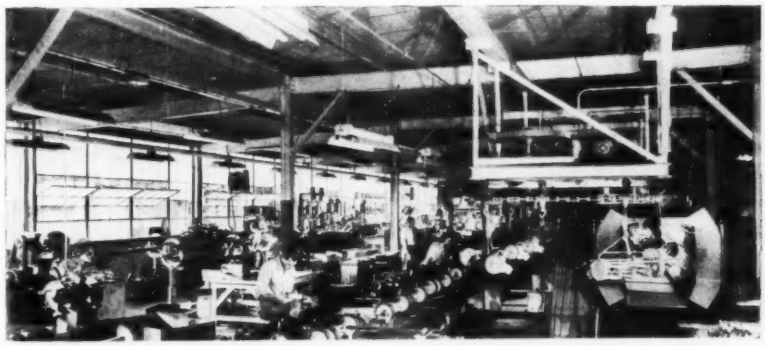
This snow plow attachment has a reversible discharge spout that discharges the snow up to 55 inches high so that the snow falls as far as 18 feet from the sidewalk being plowed.

Former President Allen Of Mathieson Alkali Dies

Edwin Madison Allen, former president and chairman of the board of The Mathieson Alkali Works (Inc.), 60 East 42nd St., New York 17, N. Y., died recently.

A director of the company at the time of his death, Mr. Allen joined Mathieson in 1919 as president. He was made chairman of the board in 1938 and continued in the two posts until his retirement as president in 1944. He resigned from the board in 1946.

Moto-Mower Completes New Plant in Detroit



A view of the interior of Moto-Mower's new plant, showing motor mountings on the roller conveyor; note the overhead conveyor in the upper right, and the infrared light banks at the right for drying the paint on the chassis after spraying.

The Moto-Mower Co., 4600 Woodward Ave., Detroit 1, Mich., has completed its new, completely modern plant for the assembly-line production of its power lawn mowers. According to M. S. Ramsey, vice-president, the new plant has enabled the company "to supply a very much improved product and at a price increase that is hardly more than accounted for by added features in spite of all the greatly swollen material and labor costs."

XUM

For Economical
ICE CONTROL

SOLVAY
TRADE MARK REG. U. S. PAT. OFF.
CALCIUM
CHLORIDE

• STOPS SKIDS QUICKER
• LASTS LONGER
• DOESN'T FREEZE IN STOCK PILES

SOLVAY SALES DIVISION
ALLIED CHEMICALS & DYE CORPORATION
40 Rector Street New York 6, N. Y.

Branch Sales Offices

Boston Charlotte Chicago Cincinnati Cleveland
Detroit Houston New Orleans New York
Philadelphia Pittsburgh St. Louis Syracuse

Schimmel Appointed Sales Manager by Wood Mfg.

B. A. Schimmel has been appointed sales manager of the Wood Mfg. Co., North Hollywood, Calif.

B. A. Schimmel

Mr. Schimmel, who is replacing DeWitt Page, will handle the overall program of Wood's line of Roadmixers and specialized road-building equipment. One of his early assignments will be a tour of the country to analyze the particular requirements of selling mix-in-place road equipment in the various regions of the country.

Neon Pedestrian Signals Save Lives

Pedestrian signals have been found as important for the promotion of safety as vehicular signals. The Crouse-Hinds

Co., Syracuse 1, N. Y., has a line of neon instruction signals manufactured with cast aluminum housing and with plexiglass covering the tubing. Among the variations obtainable are red and green lettering one or two lines high, to be mounted on top of a post, on bracket arms, on a span wire, or on a mast arm. Standard signs may be obtained from stock. Specialized instructions can be ordered.

Knappen Engineering Co. Gets Contract

The Knappen Engineering Co., New York, N. Y., has been retained to conduct a survey to improve and develop the Delaware River port facilities from Trenton, N. J., to Delaware Bay, including the ports of Trenton, N. J., Philadelphia, Pa., Camden, N. J., Wilmington, Del., and several other smaller ports.

Authorized by the Delaware River Joint Commission under authority granted by Gov. James H. Duff of Pennsylvania and the New Jersey Legislature, the project calls for a program to attract both domestic and foreign trade to the ports.

Why it pays to include Cyclone Fence in your original plans

SINCE most municipal property "takes a beating," you'll find Cyclone Chain Link Fence the surest way to get lasting protection for both the property and the public. And when you put Cyclone in your plans right at the start, you make sure that the fencing will be an integral part of the entire design.

Cyclone Fence is sturdy. It stays taut and true through many years of service. And there's a type to fit every need, from public utilities to parks, playgrounds and pools.

Our factory-trained engineers know the best types of fence for the job, and how to get the most protection from the least footage. They are available to assist you with plans and estimates, and there is no obligation for their service.

In any event, you will find it helpful to have our free reference manual on U·S·S Cyclone Fence, Gates, and other property safeguards. Just fill in the coupon below.

Send for FREE 32-Page Book. Profusely illustrated. A reference manual full of facts and specifications. Complete information on different types of fence, gates, athletic field equipment, and other property safeguards.

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Please send me, free of charge, your 32-page book on Fence.

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Address.....
City..... State.....
Title or official capacity.....

UNITED STATES STEEL

When the snows come, break the blockade with POWER—with International Diesel tractors.

Yes, when the snows pile up under a driving wind, International-powered earthmovers prove their emergency value. Milwaukee found that out last winter. So did Buffalo and many other cities in the snow belt.

International Diesel Crawlers provide the traction and power needed for the BIG snow-removal jobs. Teamed up with angle-dozer blades or great "V" plows, they really clear the way for traffic!

Marked advantages lie in their excellent balance of power to weight, their all-weather starting system which puts them to work quickly regardless of temperature extremes, and their matchless economy of fuel and maintenance.

For routine snow removal, International Wheel Tractors equipped with blades or plows make quick work of street or highway jobs. With front-end loaders they are excellent for removing the drifts of crippling snowstorms, too.

Get all the facts about these year-'round International workers. Your International Industrial Power Distributor has all the information on the tractors and equipment you need. See him soon and discover why Internationals are preferred.

INTERNATIONAL HARVESTER

Tune in James Melton on "Harvest of Stars" NBC Sunday!

Industrial Power Division

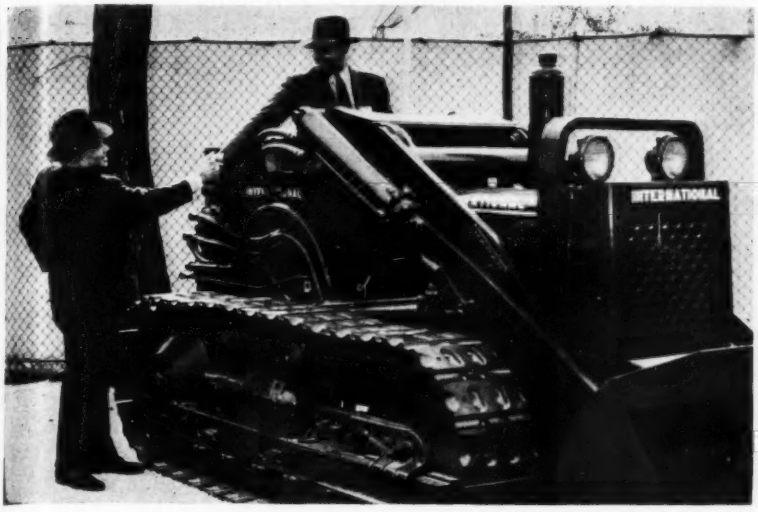
INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue • Chicago 1, Illinois

INTERNATIONAL POWER

CRAWLER AND WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS

International Harvester Celebrates Hundredth Anniversary



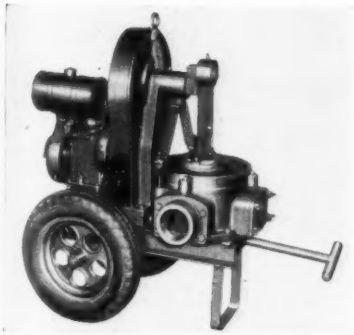
Bill Parrish, assistant sales manager of International Harvester's Industrial Power Division, greets Clarence "Killy" Killebrew, sales manager of the Frank G. Hough Co., at "Harvester's 100 Years in Chicago" exhibit. The Hough Co. manufactures shovels and loaders mounted on International Industrial tractors and also makes the Hough line of Payloaders powered by International engines.

Michaels Art Bronze Elects Directors

At a recent meeting of the shareholders of The Michaels Art Bronze Co., Covington, Ky., E. W. Bettinger, of the Mutual Mfg. & Supply Co., was elected to the board of directors. Mr. Lawrence Michaels, Mrs. Lila Michaels, and Dr. C. N. Heisel were reelected as directors.

New Diaphragm Pump With 1,000 to 6,000 GPM

A newly developed diaphragm pump in 3-inch and 4-inch sizes with capacity of 1,000 to 6,000 gpm is in production at the Carver Pump Co., Muscatine, Iowa. The pumps are particularly useful in the pumping of sludge, mud, grit, seepage, slime, and other fluids with a solid content up to 25 percent.

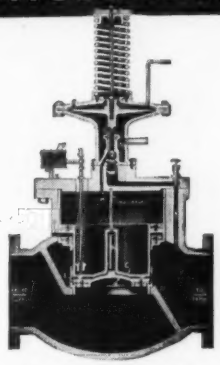


The Carver diaphragm pump is mounted on a rubber-tired, two-wheel truck, but may be obtained with steel wheels or skid mounting.

The only moving part of the pump exposed to gritty water is the highly durable live-rubber diaphragm, which can be quickly and easily replaced when necessary. Anti-friction Timken roller bearings are used on the pump rod and in the main transmission, one of the latest developments in diaphragm pumps. Other features include the high accessibility of the non-clogging valves for inspection or removal, a completely enclosed transmission, a large water passage for free flowage, and has an easily accessible hand hole.

Although recommended for suction lifts up to 20 feet, the pump has a maximum lift of 25 feet. It is available with gasoline engine, electric motor, or without a power source.

AUTOMATIC "STOP-STARTER"
GOLDEN-ANDERSON
ALTITUDE VALVES



Eliminate all water surges and shock

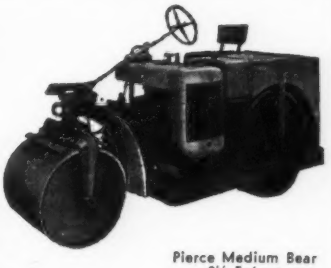
Installed where a single line is used for both supply and discharge, the valve will maintain a constant water level within 3" to 12" variation and by means of the "stop-starter" switch stops the pump as the valve closes.

Let GOLDEN-ANDERSON Engineers, Solve your Flow Control Problems!

GA
GOLDEN-ANDERSON
VALVE Specialty Company
PITTSBURGH 22, PA

A Roller For Every Job

Sturdy, heavy-duty rollers, engineered to stand up under the toughest conditions. Pierce-Bear Tandem Rollers are powered by economical Allis-Chalmers 4-cylinder industrial type gasoline engines. Variable weights, from 3½ to 5 tons with built-in water tanks for ballast and wet rolling.



Pierce Medium Bear
3½-5 tons

Pierce Baby Bear
2½-3 tons

The new 2½-3-ton Pierce Baby Bear is designed for close-in work and small area maintenance. It works against a curb up to 25 inches high and within 1½ inches of a higher wall or building. Final drive is within the rear roll. Use Pierce-Bear Tandem Rollers for all-around performance. Write for folder.

Pierce-Bear Rollers
Lewis Manufacturing Co.
415 Hoefgen Ave.—San Antonio 6, Tex.

Parky says....

A MERRY Christmas

AND AN EVEN BETTER TRAFFIC REGULATED New Year

TO ALL CITY OFFICIALS EVERYWHERE...AND TO THE MERCHANTS AND TOWNS-PEOPLE OF THE NEARLY 600 CITIES HAVING PROVEN 10-YEAR DEPENDABILITY OF MILLER METERS.....

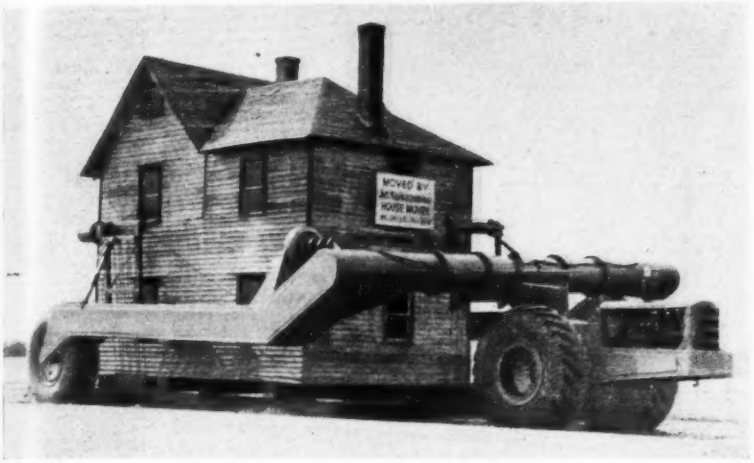
Write us to submit a Proposal to your city for the coming year.

MINUTES REMAINING
60 48 36 24
120
VIOLATION
TURN HANDLE AFTER EACH COIN
5¢ 1¢
MILLER METER
TO OPERATE
1-DROP ONE COIN IN ITS SLOT
2-TURN HANDLE SLOWLY FAR AS POSSIBLE AFTER EACH COIN
BOTH RED FLAGS MUST DROP
SEE OTHER SIDE FOR RATE
WARNING
ANY ONE USING SLUGS OR TAMPERING WITH THIS METER IS SUBJECT TO ARREST

DUNCAN METER CORPORATION

835 NO. WOOD ST. • CHICAGO 22, ILL.

Move a House Without Jacking and Rolling



The electrically operated Tournamover, manufactured by R. G. LeTourneau, Inc., Peoria, Ill., is designed to pick up a house and carry it away. The laborious practice of raising and lowering the house by jacking and blocking has been dispensed with, and there is no need for the usual rollers and dollies commonly employed. The Tournamover picks up the frame supporting the house and moves off to the new site.

Nelson Appointed Manager of Ryerson Cincinnati Plant

Earl R. Nelson has been appointed manager of the Cincinnati, Ohio, steel-service plant of Joseph T. Ryerson & Son, Inc., 2558 West 16th St., Chicago, Ill.

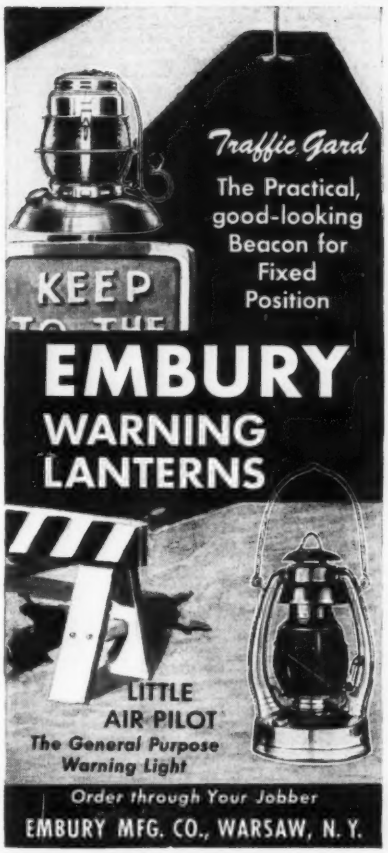
Earl R. Nelson

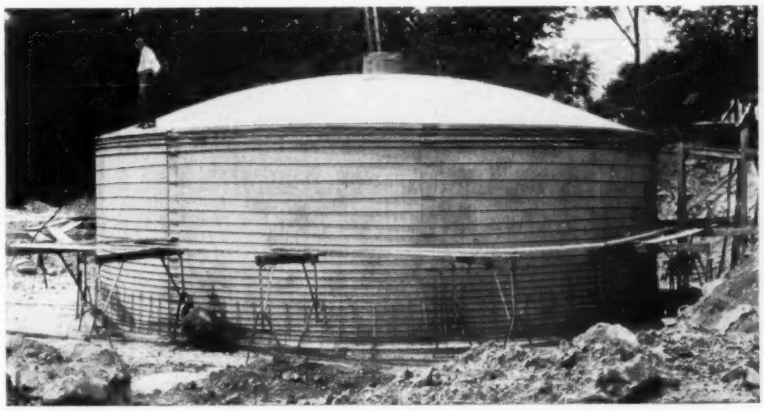
Following his graduation from the School of Commerce of the University of Illinois in 1927, Mr. Nelson began his career with Ryerson, first in the credit department and later as credit manager. For the past ten years he has served as sales representative in the Dayton-Springfield, Ohio, area.

Great American Industries Opens Detroit Sales Office

Great American Industries, Inc., 230 Park Ave., New York, N. Y., has opened a Detroit sales office in the Fisher Bldg. R. B. Harper will be in charge.

The appointment of Mr. Harper as Detroit sales representative is part of an expanded sales program by Great American into the automotive and refrigeration fields. Electrical products and medallions for the automotive trade are manufactured by Connecticut Telephone & Electrical Division of the company and Rex Products Corp., a wholly owned subsidiary. Rubatex low-temperature insulation is produced by the Rubatex Division, in Bedford, Va.; other manufacturing plants operated by Great American Industries are Linn Coach & Truck, Oneonta, N. Y., and Ward LaFrance Truck, Elmira, N. Y.





• PRE-STRESSED "GUNITE" •

The picture shows a partially completed 40' diameter, 110,000 gallon pre-stressed "GUNITE" tank with a "GUNITE" dome roof, designed and built by us.

When this photo was made the tank was filled with water for leakage test. After the test showed the tank to be bottle-tight, two inch mesh reinforced "GUNITE" was placed over the outside to permanently protect the pre-stressed hoop rods. The tank was subsequently covered with earth, with 12" of fill over the dome.

This photo illustrates our method of pre-stressing the hoop rods by means of several turnbuckles in each hoop.

Our Bulletin D2300 describes and illustrates prestressed "GUNITE" construction in detail and also scores of other uses of "GUNITE."

Write today for your free copy of Bulletin D2300.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.

PROVED TRUSTWORTHY DOWN THROUGH THE YEARS

High-strength cast iron • Fully bronze-mounted • Rigidly inspected, tested to 300 lbs. hydrostatic pressure • Conforming to A.W.W.A. specifications • Sizes from 2″ to 30″.

People bury R. D. Wood Gate Valves with complete confidence. And why not? They are an honored name in the waterworks field—a name that for more than 75 years has stood for everything that such an important mechanism should be.

R. D. Wood Gate Valves have built an enviable reputation under all sorts of conditions. Enviable, but not amazing—considering how they are built, and how they function. Just 3 moving parts to the internal mechanism; precision-made parts virtually wearproof in their action. The discs are lifted into the bonnet without friction, seated without distortion. Tight, leakproof contact is assured. No pockets to collect sediment and scale. Full capacity flow.

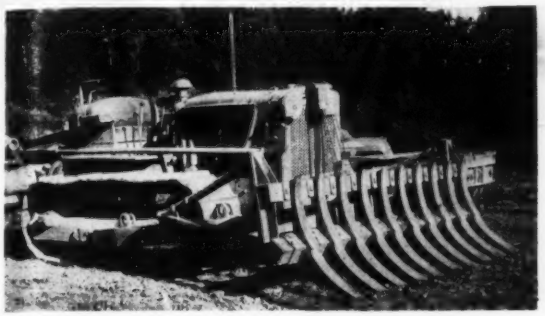
Gate valves are of prime importance. For the best interests of your community, and your own peace of mind, choose R. D. Wood Gate Valves every time.

Manufacturers of
Mathews Hydrants and "Sand-Spun" Pipe
(Centrifugally Cast in Sand Molds)

R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Caterpillar to Market Florida Land Clearing Equipment Co. Rake and Stumper



The Fleco root rake attached to a Caterpillar diesel D 7 track-type tractor.

The Fleco root rake and detachable stumper for brush and lateral root cutting, stumping, and brush piling, manufactured by the Florida Land Clearing Equipment Co., Jacksonville, Fla., will be marketed exclusively by the Caterpillar Tractor Co. distributor organization, Peoria 8, Ill.

The root rake disposes of top growth and roots in a single operation and disposes of cuttings without excessive piling of soil. It is applicable in drainage ditch work, dam construction, road right-of-way clearing, borrow pit clearing, and piling. Manufactured in sizes to match the Caterpillar Diesel D6, D7, and D8 track-type tractors, the root rake's teeth can be lowered 16 inches into the ground to rake out roots.

The detachable stumper, designed for attachment to the frame of angling-blade bulldozers, can be mounted or dismounted in less than a minute. Providing a cut 24 inches deep and 36 inches wide, the stumper cuts lateral roots with a minimum of soil disturbance. The teeth are made strong enough to lift the stump, tree, or boulder as it pushes it from the ground.

H. W. Vine Sales Manager For Gorman-Rupp

H. W. Vine has been appointed manager of industrial sales for the Gorman-Rupp Co., Mansfield, Ohio. Mr. Vine's career in the industrial pump field has included positions with Fairbanks, Morse and Co., Chicago 5, Ill.; Weinman Pump Co., Columbus, Ohio, and the Carver Pump Co., Muscatine, Iowa.

H. W. Vine

Gorman - Rupp industrial pumps include a line of self-priming, centrifugal, light-weight, high-pressure pumps, a new sewage sump pump, mine gathering pumps, and pumps for handling truck-tank contents in the petroleum marketing field.

Pioneer Gen-E-Motor Appoints Walker

Pioneer Gen-E-Motor Corp., Chicago, Ill., has appointed M. J. Walker to the position of vice-president in charge of sales. The company manufactures power and hand lawn-mowing equipment and electric power plants.

Superior Moves Office

The Jacksonville, Fla., district sales office of the Superior Engine Division of The National Supply Co. has been moved to 1499 Gaines St. The mail address remains P. O. Box 1523. George N. Torlina is manager of the office.

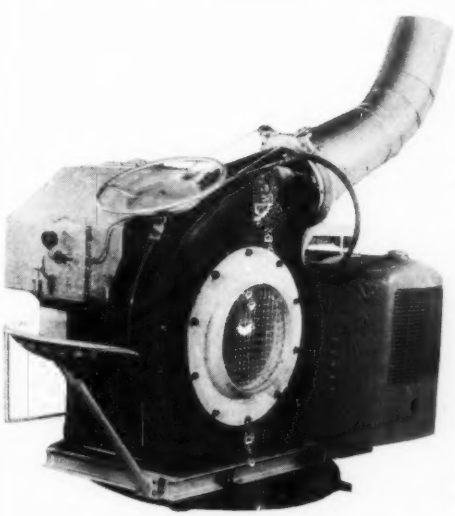
The LAWRENCE

AERO-MIST

SPRAYER

A 3-WAY INVESTMENT

FOR INSECT PEST CONTROL



Here's the new revolutionary mist sprayer that can be used by TREE, PARK and HEALTH departments for protection against defoliators, obnoxious pests and disease carrying insects. One machine for all 3 departments. Fast . . . efficient . . . economical . . . field-tested, the Lawrence Aero-Mist Sprayer projects insecticides to extreme distances in the form of a fine mist. All spray particles work in eliminating pests. Maximum pest protection at a minimum cost assured.

WRITE TODAY FOR FURTHER DETAILS, PRICES, AND FREE BULLETIN #1.

SHARE THE USE 3 WAYS—SHARE THE COST 3 WAYS

TREE DEPARTMENTS

Lawrence Aero-Mist Sprayer for the protection of shade trees and shrubs from defoliators and tree diseases.

PARK DEPARTMENTS

Lawrence Aero-Mist Sprayer for the elimination of obnoxious pests at beaches, ball parks, picnic grounds, playgrounds and public parks.

HEALTH DEPARTMENTS

Lawrence Aero-Mist Sprayer for the protection of community health from dangerous disease-carrying insects.

THE LAWRENCE AERO-MIST SPRAYER COMPANY

58 Federal St., Greenfield, Mass.

Tell 'Em — WHAT TO DO...

Embossed signs on Bonderized metal are permanent. Miro-Flex is NOW in position to supply the complete line, either plain, embossed or reflectorized.

Send for catalog of stock signs, including the two way and four way street signs.

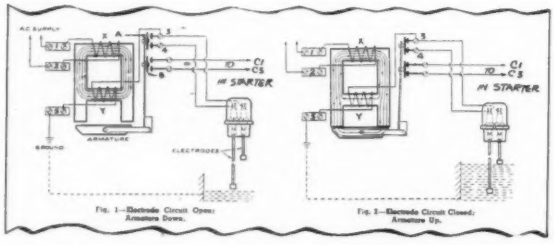
247

MANUFACTURED BY

MIRO-FLEX COMPANY

1824 EAST SECOND STREET · WICHITA, KANSAS

Where to Use Floatless Controls



This diagram, taken from B/W's catalog, illustrates the principle and operation of the B/W relay.

Generally speaking, one can use floatless controls in any mechanism that uses electricity, according to the B/W Controller Corp., Birmingham, Mich. Typical examples in the municipal field would be: general-purpose, condensate-return, deep-well, boiler-feed, and sump and sewage pumps; unit-heater and flood controls; air-operated sewage ejectors; high and low water cutoff and signals; low-voltage control for motor starters; flow signals, and garage-door openers.

The B/W control requires no floats or other moving parts. It consists of a patented induction relay and electrodes suspended from electrode holders. A bulletin issued by the B/W Controller Corp., catalogue No. 145-A, explains in detail how the floatless controller works and gives several typical wiring diagrams.

Dick Company Starts Work on New Plant

The A. B. Dick Co., 720 W. Jackson Blvd., Chicago 6, Ill., has begun the construction of its new plant in the village of Niles, northwest of Chicago.

The new plant, which will be completed by the summer of 1949 under the supervision of the Austin Company of Cleveland, will contain all the general offices and manufacturing processes now handled in the Jackson Boulevard and Lake Street plants.

Twin Coach Hits 2,000 Mark in Production

W. B. Fagel, Jr. and Sr., standing beside the 2,000th post-war Twin Coach, delivered to the Detroit, Mich., Department of Street Railways.

Eskin Appointed General Mgr. Of Realock Fence

The Colorado Fuel and Iron Corp., Continental Oil Bldg., Denver 2, Colo., has announced the appointment of J. S. Eskin to the position of general manager of sales of Realock Fence Division for the corporation and its subsidiary companies.

J. S. Eskin

Mr. Eskin, who will be located at the Curtiss Bldg., 361 Delaware Ave., Buffalo 2, N. Y., spent eight years with the Cyclone Division of U. S. Steel in Newark, N. J. In 1930 he came to Wickwire Spencer Steel, which has since merged with C. F. & I., and later became sales manager of Wickwire's Fence Department.

Other appointments of C. F. & I. include that of Paul E. TenHoopen to the position of sales manager of the Realock Fence Department and of James A. Old to sales manager of the Hardware Products Department of the Wickwire Spencer Steel Division.

Harry S. Black Dies

Harry S. Black, senior vice-president and a member of the Board of Directors of The Ohio Brass Co., Mansfield, Ohio, died recently after a brief illness.

Harry S. Black

Mr. Black joined Ohio Brass in 1898, ten years after it had been founded. In 1902 he was elected treasurer of the company and held this position until 1919, when he was elected vice-president. Nine years later, he was named senior vice-president.

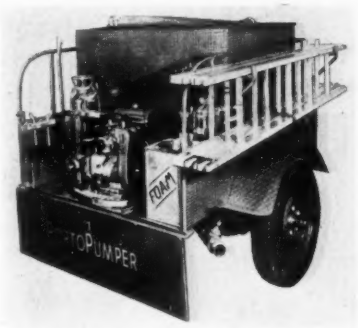
Fire Fighting Away From Water Source

The addition of a tank to the standard Porto-Pumper—the complete fire department in itself—makes this trailer valuable for fighting fires away from a water source as well as near one.

The standard Porto-Pumper contains a demountable, independent-powered, 85-pound, high-pressure, utility Porto-Pump; 50 feet of supply hose and 200 feet of fire hose; an 18-foot, 3-section extension ladder; a fire axe, a hand extinguisher, a selection of nozzles, and hydrant adapters. The "Camel" has, in addition, a 200-gallon tank.

As with the standard model, the "Camel" takes water from any source—hydrant, well, ditch, pond, or stream. The addition of the tank makes it possible to fight fire where there is water source.

Other new equipment offered as optional with either model includes nozzles for producing foam, making this unit usable for protecting gas and oil bulk storage, depots, air fields, etc.



The "Camel" Porto-Pumper unit, complete with pump, tank, accessories.

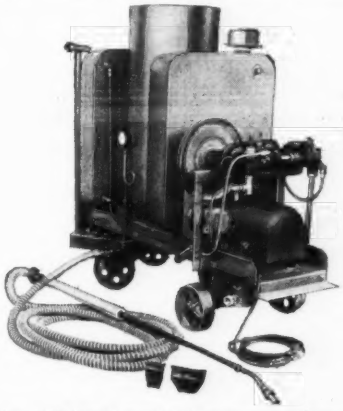
Fog nozzles can be used where water vapor protection is desirable.

The 200-gallon tank gives the Porto-Pumper a place in other municipal departments, since the unit may be used economically for spraying and weed-control operations.

The mechanism is manufactured by Porto-Pump, Inc., 227 Iron St., Detroit 7, Mich.

New Steam Cleaner

The Hypressure Jenny Division of Homestead Valve Mfg. Co., Coraopolis, Pa., has announced a new "Utility" model Hypressure Jenny steam cleaner, with a choice of either oil or natural gas burner, and electric motor driven or gasoline engine driven mechanism.



The "Utility" model Hypressure Jenny steam cleaner.

Priced at $348, the new mechanism has instant starting, welded unit construction,

Among the many uses for which the machine may be adapted are cleaning, stripping, oil-base paints, thawing radiators and culverts, disinfecting, spraying, and sterilizing.

THE "SCOTCHMAN"

TARCO'S SALT SAVER

Actually applies *theoretical* quantities. It's *fast*, mounts on any dump truck or pick-up in three minutes. Handles *bulk* or *bagged* material. Perfect salt pattern, no waste, *ordinarily* saves 50% or more. Full width, or right, or left, complete control. Quality built of *stainless* steel.

TARRANT MFG. CO.
East Ave., Saratoga Spa., N. Y.

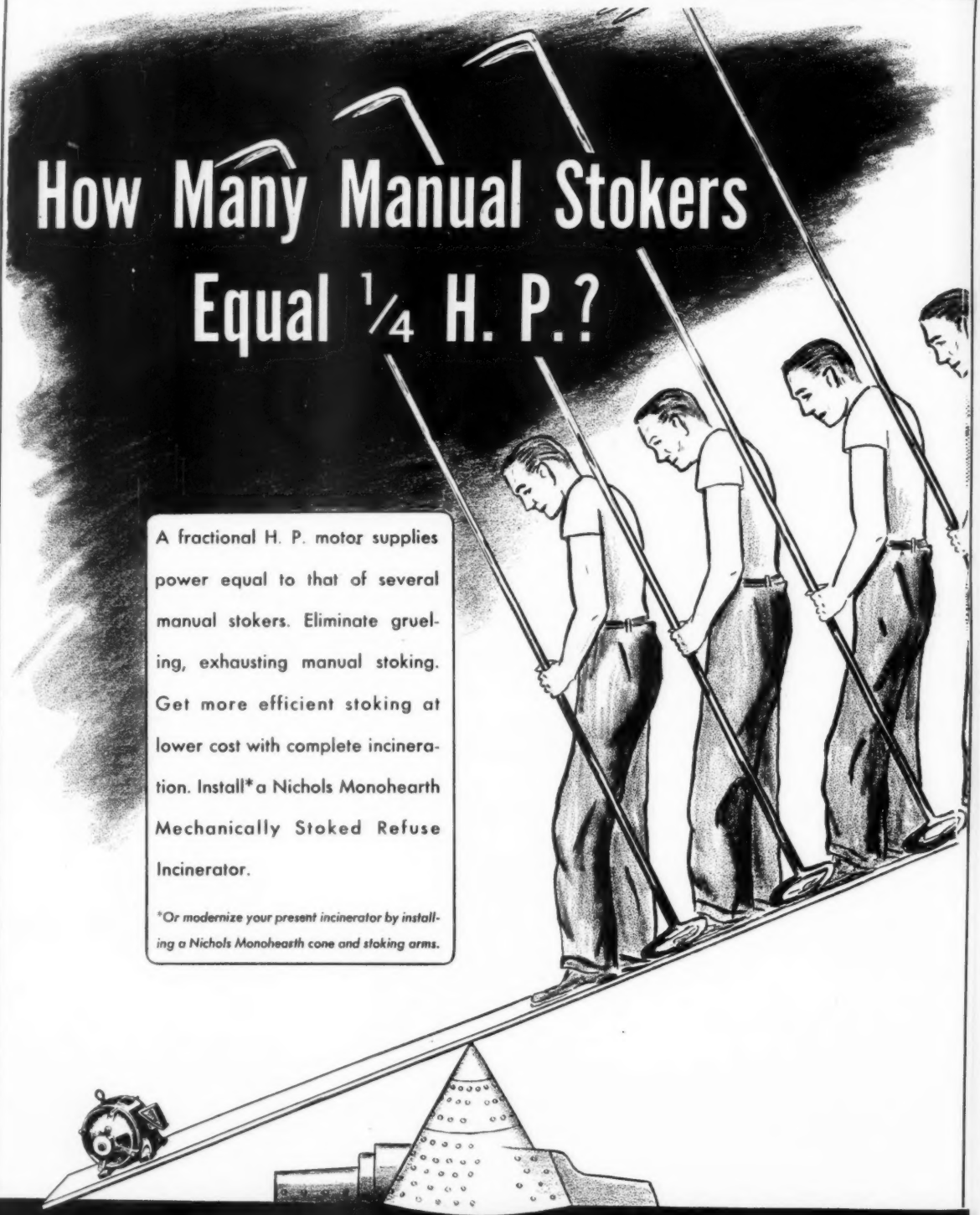
CITY SURVEYS

WATER DEPT. OPERATIONS
STREET LIGHT OPERATIONS
BUDGETARY CONTROL AND FORECASTING
HOSPITAL FACILITIES
FINANCIAL; FISCAL, ECONOMIC
FIRE DEPT. AND HYDRANTS
TAX RATES, APPRAISALS AND EVALUATIONS
SCHOOL DISTRICT ECONOMIES
TRANSPORTATION
STREET TRAFFIC AND PARKING
GARBAGE DISPOSAL
MUNICIPAL ZONING AND PLANNING
CIVIL SERVICE AND PERSONNEL
SPECIAL PROJECTS
UTILITY RATES

OVER 20 YEARS' SERVICE

C.T. GILLIAM & ASSOCIATES
6311 NORTH FIGUEROA ST.
LOS ANGELES 42 • ALBANY 4545

How Many Manual Stokers Equal 1/4 H. P.?



A fractional H. P. motor supplies power equal to that of several manual stokers. Eliminate grueling, exhausting manual stoking. Get more efficient stoking at lower cost with complete incineration. Install* a Nichols Monohearth Mechanically Stoked Refuse Incinerator.

*Or modernize your present incinerator by installing a Nichols Monohearth cone and stoking arms.

NICHOLS

ENGINEERING & RESEARCH CORPORATION

60 WALL TOWER NEW YORK 5, N. Y.

UNIVERSITY TOWER BUILDING, MONTREAL, CANADA

W. M. Kinney Retires From Portland Cement

William M. Kinney, vice-president of the Portland Cement Association, Chicago, Ill., has retired from the organization.

W. M. Kinney

Mr. Kinney joined the staff of the Universal Portland Cement Co. in 1907. Seven years later, he was appointed inspecting engineer and engineer of the Information Bureau. In 1918 he was elected general manager and secretary of the Portland Cement Association, and in 1931 was elected vice-president.

Enterprise Opens New Office In Midwest

The Diesel Engine Division of Enterprise Engine and Foundry Co., 600 Florida St., San Francisco, Calif., has established a branch sales and service office at 1909 Leavenworth St., Omaha 2, Nebr. Manager of the new office and sales representative for the area is Glenn Harris, previously attached to Enterprise's San Francisco office.

Glenn Harris

Mr. Harris has been in the diesel-engine business for over ten years, four of them as engineering officer with the armed forces.

Melter Removes Snow From Streets and Airports

A practical application of an old idea in snow removal, previously considered too expensive for general use, is making its appearance in the municipal field in the form of the Snow King. This machine consists of a burner arrangement that mounts on a standard wheel-type motor grader. The application of heat is designed to remove all the snow and ice and still not damage the pavement. The device represents six years of study and has demonstrated its usefulness at the Greater Pittsburgh Airport in Coraopolis, Pa.

Data by the company indicate that the two combustors produce approximately 8 million B.T.U.'s per hour at a fuel consumption of 60 gallons per hour. Tests indicate that the machine can remove 1,200 cubic yards of snow from an airport runway in an hour's time. Operating costs over an 8-hour shift will average $10 per hour; thus the 1,200 cubic yards can be cleared at a cost of less than one cent per cubic yard. This compares with 20 cents to $1.00 per cubic yard for Conventional methods.

Concern over possible damage to the pavement can be appraised more accurately by the fact that the machine travels at an average speed of 10 mph. At this rate it is difficult to increase the temperature of the pavement sufficiently to damage it, the manufacturer states.

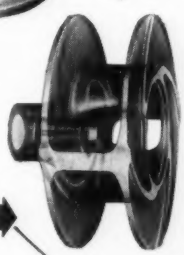
Experience with the melter indicates that it operates most efficiently when it starts with the snowfall. T. J. Clark, Post Engineer, 575th AAF Base Unit, Ferrying Division, Air Transport Command, has observed that the machine will remove ice if operated at 4 mph; that it will remove snow that already has fallen if operated at 6 mph; and that when it starts with the snowfall it can be operated successfully at 10 to 12 mph.

The machine is a product of the Snow King Mfg. Co., Plaza Bldg., Pittsburgh, Pa.

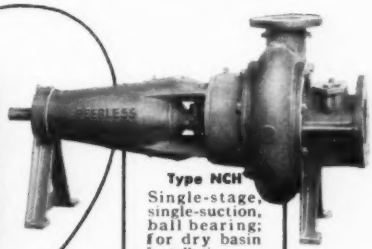
Non-Clog IN ACTION AS WELL AS IN NAME

Wherever the improved Peerless Non-Clog Pump is installed, it lives up to its name by offering positive *non-clog* pumping action. All wearing rings, end plates, filler rings, etc., have been discarded in the Peerless design, in favor of an improved impeller with unique repelling vanes on both of its outer shrouds. These repelling vanes provide a pumping action similar to the working vanes between the shrouds, preventing accumulation of solids in the space between the impeller and casing side walls by agitating the solids into the center flow of the fluid stream. Specify Peerless Non-Clog Sewage Pumps for trouble-free service and economy in sewage treatment and relift stations.

Type NCV
Capacities: 100 to 7000 g.p.m.
Heads: 12 to 70 feet



THE IMPELLER IS THE HEART OF ANY PUMP



Type NCH
Single-stage, single-suction, ball bearing; for dry basin installation.

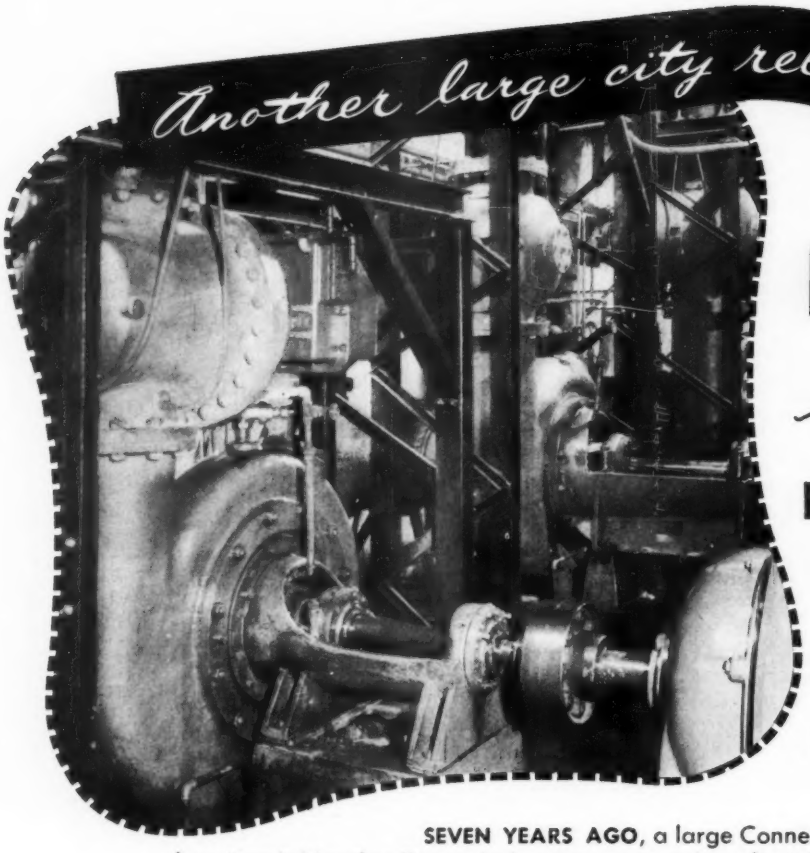
These improved sewage pumps utilize a two port impeller with unique repelling vanes on outer shrouds. Scientifically designed working vanes of uniform thickness develop positive pumping action. Peerless' constant experimentation and unique impeller design has resulted in a dependable means of pumping entrained solids.

PEERLESS NON-CLOG SEWAGE PUMPS

REQUEST BULLETIN: All Peerless improvements and advantages in non-clog sewage pump design are described in this new bulletin. Write for No. B-154.

PEERLESS PUMP DIVISION • *Food Machinery Corporation*

Factories: Los Angeles 31, Calif.; Quincy, Ill.; Indianapolis, Ind.
District Offices: Chicago 40, 4554 No. Broadway. Philadelphia Office: Suburban Square, Ardmore, Pa. Atlanta Office: Rutland Building, Decatur, Georgia; Dallas 1, Texas; Fresno, Calif.; Los Angeles 31, California



Morris Pumps

For Dependable, Long-Term Service at Low Maintenance Cost...

SEVEN YEARS AGO, a large Connecticut city installed four Morris Nonclog Pumps in its sewage pumping plant. Two 16", one 12" and one 10"—all taking off from a common wet well. The operation of these pumps is automatically controlled by a float which starts motors when sewage reaches predetermined level.

This float control operation eliminates check valves and water hammer. Motors start up and reach maximum speed before gate fully opens . . . and cut out after the gate is closed.

Why Municipal Engineers Prefer MORRIS Non-Clog Pumps

In city after city, this preference is based upon careful analysis of Morris design and construction . . . dependability . . . economy and long-term service.

- Morris Non-Clog Pumps are designed for high capacities and moderate heads . . . for vertical or horizontal operation.
- Their mechanical design maintains rigid alignment of parts. For example, large ball or roller bearings are held in housings concentrically located in heavy bearing frame bolted to the hub side of the pump.
- In vertical pumps, the entire rotating element, the hub disc and bearing frame are a self-contained unit, easily removed for inspection or repair without disturbing the shell or suction and discharge connections.
- Renewable rings on both suction and hub sides of impeller, matched by renewable rings in the shell and hub disc, facilitate maintenance of hydraulic seals —so important to top efficiency.
- Water passages of shell have been carefully designed and smoothed to minimize skin friction.
- The shaft is protected from packing wear by a renewable bronze sleeve where it passes through the stuffing box. Bearings are locked against shaft shoulders by threaded nuts to insure continued tightness on the shaft.

WRITE TODAY for specifications and operation data on pumps to fit your particular needs.

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*

New Curb and Gutter Machine Paver

The cost of paving curbs and gutters is expected to become more reasonable with the use of a new Dotmar curb-and-gutter paver. This recently developed machine paves a standard 2½-foot-wide curb-and-gutter section at the rate of five lineal feet per minute, and at the same time eliminates the need of face rails and minimizes

The Dotmar curb-and-gutter power at work.

greatly the amount of manual labor involved.

Kalamazoo and Bay City, Mich., are two cities that are already profitably putting the machine to use in street-improvement programs.

The machine is manufactured by the Dotmar Industries, 503 Hanselman Bldg., Kalamazoo, Mich.

New High-Intensity Light For Airport Runways

The new Westinghouse high-intensity airport runway light.

A new, type HL, airport runway light which clearly outlines runways under all visibility conditions from clear moonlight nights to zero-zero daytime is being manufactured by the Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

Conforming to CAA Specification L-820, the light is actually two units in one: an upper, low-intensity unit that can be varied in five steps from 16- to 1,600-candlepower intensity, and a lower, high-intensity unit that gives an additional five steps from 1,000- to 100,000-candlepower intensity.

The high-intensity light is produced by two unidirectional, sealed-beam lamps situated at opposite ends of a barrel-shaped housing, each supplied from a separate circuit operated off a standard brightness-control regulator. When used during restricted visibility, the unidirectional light prevents lighted haze or fog curtains behind the light.

The low-intensity lamp is located within an asymmetric lens assembly mounted on top of the high-intensity housing. During normal visibility, this bi-directional element provides visual identification of the runway from horizon to zenith for any direction of approach and insures color fidelity during operation at very low brightness. Color screens can be used when desired. A separate supply circuit is used for this light, controlled by the regulator operating the lighting on the other runways.

From

THE ANDERSON HERALD

Anderson, Indiana, September 30, 1947

"CITY WATER

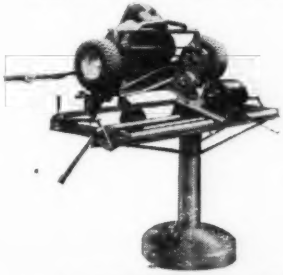
"This week, the city administration is giving the public an opportunity of visiting the city water plant to examine the water coming from the two sources—White River as we have had it for years and the Killbuck Basin which has been introduced in the last sixty days. It will be a revelation.

"The water that we have been using for years from White River is a pretty sordid mess. It comes to us from Muncie and the other towns and cities to the northeast. And as it passes through them, it is loaded with filth that cannot be removed by the natural processes of the stream. Consequently, city chemists here must take this water and chemically purify it before it enters the mains. This means introducing heavy quantities of chemicals which affect the taste of the water. Incidentally, the cost of these chemicals runs into the tens of thousands of dollars each year.

"The water we are now using in the mains is from the Killbuck Basin. This water was provided by the Ranney system, bargained for by the administration on a basis where it will cost the users no more money yet they will get a superior brand of water and eventually own the system themselves. This clear water, unaffected by the refuse of many cities and towns, is further purified in the gravel and sand of the Killbuck basin north of town. When it comes into the water plant it is practically pure so that little must be done to it to send it to customers. It is softer water, too, which means that you use less soap to make suds for washing."

RANNEY METHOD WATER SUPPLIES, INC.
63 S. High St., Columbus, Ohio
WATER SUPPLY ENGINEERS AND CONTRACTORS

SAVE MONEY THREE WAYS!



The Modern Lawn Mower Sharpener saves you money three ways in your maintenance operations. • Modernize • Standardize • Economize—the Modern way.

Send for FREE Bulletin No. 25A, for details.

MODERN MANUFACTURING COMPANY
160 N. FAIR OAKS **PASADENA, CALIF.**

In **TUCSON,** *Arizona, it's . . .*

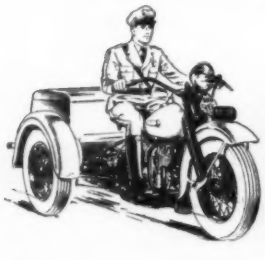
HARLEY-DAVIDSONS EXCLUSIVELY!

The Tucson, Arizona, Traffic Squad, with (left to right) Captain Frank Keefe, and Officers Richard Porter, Ray McAllister, Ken Ice, John L. Vows, I.P. Altenberger, Leland Casey and Herman King.

Police of Famed Winter Resort City Find Motorcycles Most Effective For Traffic Control

THE thousands of vacationists who annually crowd into cities such as Tucson create complex problems in traffic control. Efficient handling of traffic becomes difficult even with adequate police manpower and modern methods. Tucson, therefore, turned long ago to motorcycles to provide the flexibility, speed and effective patrol necessary under all conditions if accident rates are to be kept low and police efficiency high. Through the use of Harley-Davidson Motorcycles and Servi-Cars, Tucson's Traffic Enforcement Bureau has continued to successfully meet today's ever-growing demands for reduction of accidents and enforcement of traffic regulations. In your city, also, the use of Harley-Davidsons will result in noticeably better traffic regulation and in better and more economical use of police manpower. Ask your Harley-Davidson dealer to show you the superiorities of Harley-Davidson Motorcycles, Servi-Cars and Sidecars for many phases of police work.

HARLEY-DAVIDSON MOTOR COMPANY • Milwaukee 1, Wisconsin



HARLEY-DAVIDSON
POLICE MOTORCYCLES

Home Sink Pulverator Eliminates Garbage

The mechanism at the top, which fits flush with the floor of the sink, regulates the pulverization of the Waste King.

An automatic home pulverator, which can be installed in any kitchen sink with a drain opening of 3½ to 4 inches in diameter, eliminates garbage in a matter of seconds by grinding bones, parings, and fibrous foods into minute particles.

The unit is odorless, clog-proof, and safe. One electrical outlet is required, and the Waste King requires no external switches or supporting brackets.

With a capacity of three quarts at one time, ample for the average family, the pulverator is fed garbage through the drain and ejects the pulverized waste through the normal drain outlet.

The Waste King Pulverator is manufactured by the Given Mfg. Co., 3855 Santa Fe Ave., Los Angeles 11, Calif.

Appointments, Projects Of Bogert-Childs

Bogert-Childs Engineering Associates, New York, N. Y., has appointed to its staff Donald M. Ditmars, formerly a sanitary engineer with the New Jersey State Boards of Health, and Robert A. Lincoln, previously a colonel with the U. S. Corps of Engineers.

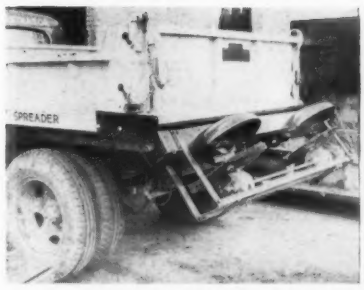
The organization recently completed plans and specifications for a $3,000,000 flood-control project for Clifton, N. J., and a report on joint sewage works for 13 municipalities and the industries of the Overpeck Valley—a work which is planned to eliminate pollution in the area draining into the Hackensack River.

New Device for Sanding Streets

The Hydro Spreader Corp., Waukesha, Wis., has started production on a unit called the hydraulic road sander, designed to simplify the problem of sanding icy streets and roads.

Attachable to the rear of the dump body of any auto truck with a power take-off, the unit has an elevated body. Sand is carried by an agitator to an opening, where it falls onto a rotating distributor that spreads the abrasive, throwing a portion ahead of the rear wheels to provide traction.

An exclusive feature of the hydraulic road sander, according to the manufacturers, is that the speed of the rotating distributor can be increased or decreased as desired, and the amount of sand and the direction into which the sand is to be thrown can be positively controlled.



"FLEXIBLE" NATION-WIDE IN SCOPE

Call or write any "Flexible" Underground Pipe Cleaning Co. division for a prompt estimate on your water line cleaning or reconditioning problems. "Flexible" service is national in scope—its experience is sharpened by 45 years of steady work and growth—its equipment is specially designed for the specialized nature of its work.

FLEXIBLE POWER BUCKET MACHINE

1947 POWER DRIVE

THE SERVICE THAT SAVES

Eliminate costly water main dig-ups — Protect underground pipe line systems—Reduce pumping costs—Increase efficiency — Shorten service interruptions—You get the benefit of proper equipment, trained personnel and the supply resources of two large, modern manufacturing plants—Call "Flexible" today.

Specialists in cleaning water mains for cities, oil companies, railroads and other widely diversified industrial concerns.

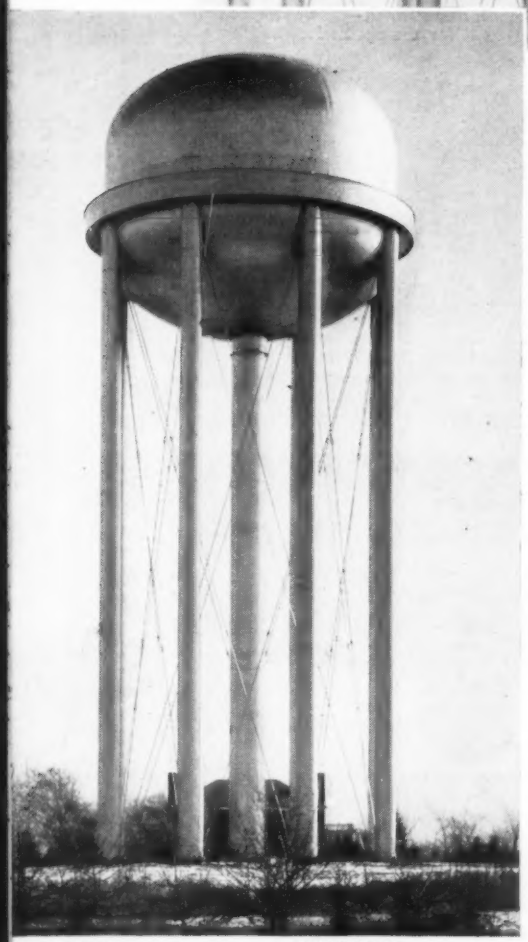
FLEXIBLE UNDERGROUND PIPE CLEANING CO.

9059 Venice Blvd., Los Angeles, California

855 Board of Trade Bldg. Chicago 4, Ill.
401 Broadway New York 13
147 Hillside Ter. Irvington, N. J.
P. O. Box 165 Atlanta
1624 Harmon Place Minneapolis 3, Minn.
29 Cordon Ave. Roslindale 31, Mass.
P. O. Box 694 Pittsburgh
P. O. Box 447 Lancaster, Texas
41 Greenway St. Hamden, Conn.

When APPEARANCE is a factor... joined with sound efficiency and economy in MODERN WATER STORAGE...

Specify



UPPER PHOTO

This 60 ft. diameter tore-ellipsoidal tank stores 500,000 gallons of water within a 25'0" head range. Height from foundation top to tank bottom is 100'0".

LOWER PHOTO

500,000 gallons of water are stored 92'10" above foundation tops in this 50'0" diameter double-ellipsoidal type tank, having a head range of 39'2".

TUBULAR COLUMN TOWER

ELEVATED STEEL TANKS

by **PITTSBURGH •DES MOINES**

Architecturally handsome appearance, complementing the character of high-value districts, is a *plus* advantage of our Tubular Column Tower elevated steel tank design.

Furnished in double-ellipsoidal or toroidal-bottom types, these tanks are available in a wide range of capacities for every community demand—providing better water service at lower cost, with attractive aspect in any locality. *Write for a consultation.*

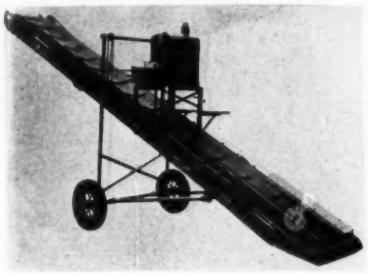
PITTSBURGH • DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH . . . . . 3412 Neville Island
NEW YORK . . . . Room 915, 270 Broadway
CHICAGO, 1216 First National Bank Building
DES MOINES . . 913 Tuttle Street
DALLAS, 1217 Praetorian Building
SEATTLE, 520 First Avenue, South
SANTA CLARA, CAL. . . . . 619 Alviso Road

Improved Portable Trough Conveyor



The George Haiss Mfg. Co., New York 51, N. Y., has recently put on the market an improved portable trough conveyor. It handles all loose materials such as sand, gravel, stone, loam, cinders, chemicals, and fertilizers from hopper-bottom cars to trucks or storage piles, or from storage piles to trucks or bins. Belt widths of 16, 20, and 24 inches and lengths of 20 to 60 feet are obtainable, with capacities ranging from 60 to 180 tons per hour.

Sewer-Cleaning Equipment On a New-Style Trailer

A new type of "Carry-All" trailer for sewer-cleaning work has been annouced by the Flexible Sewer-Rod

When it is time to transport the Carry-All back to headquarters, the caster wheel is removed.

Equipment Co., 9059 Venice Blvd., Los Angeles, Calif.

The Flexible Carry-All may be hitched to a car or truck and is equipped completely for its job of carrying a Flexible rodding outfit. The outfit consists of pipe guide, power drive, Ezy rod reel and stand, hose, picks, shovels, rope, and red flags.

Iron and Manganese Removal From Water Supplies

The removal of iron and manganese from water supplies by contact aeration and filtration through anthracite media is the method used by the Walker Process iron and manganese removal units. The water receives its initial aeration by discharging over splash plates and thereafter precipitating the hydrate of iron and manganese on the contact media by autocatolytic reaction.

Previously, to remove iron and manganese, most systems have aerated and filtered the precipitate through a sand bed. Walker engineers have combined the operations into one unit, and removed iron, manganese, carbon dioxide, and any dissolved gases. If the unit is used ahead of the lime treatment, the removal of the carbon dioxide reduces the lime requirements; in combination with zeolite softening it removes iron, manganese and gases from all the flow preceding the softener. Thus the unit protects the zeolite and permits blending softened water with by-passed water in any percent desired without fear of excess quantities of iron or manganese.

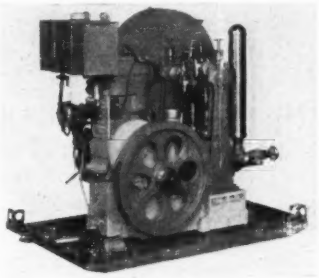
The units can be supplied either for gravity or pressure installation, depending on whether it will discharge into a reservoir prior to being rehandled by high service pumps, or whether it will discharge directly into a closed system. Carbon dioxide, however, will not be removed by the pressure unit.

A new bulletin, ISI, is being issued free by Walker Process Equipment, Inc., Aurora, Ill., describing the equipment.

Solvay Sales Appointments

The Solvay Sales Corp., 40 Rector St., New York 6, N. Y., manufacturers of alkalies and related products, has announced the appointments of the following branch managers: A. B. Kennedy for Detroit, Mich.; K. M. Dillabough for Philadelphia, Pa., and J. H. Kaiser for Syracuse, N. Y.

PORTABLE FOREST FIRE PUMP



THE GUPTILL PUMP

Here is protection against Forest Fires. A pump designed for dependable service, light and compact enough to be carried, or mounted on a Jeep. A triplex plunger pump delivering full capacity at high pressure.

Write for Information

FITZHENRY-GUPTILL CO.
135 First St., E. Cambridge 41, Mass.

A high strength to weight ratio($\frac{S}{W}$) is not only good engineering but has special advantages in tunneling work. ARMCO Tunnel Liner Plates are designed for utmost strength with the least possible weight.

This means that one unskilled workman can carry, hold and bolt into place an Armco liner section. Only a structural wrench is needed. Labor costs are low and the job goes fast. Less bulk also means less excavation, and storage requirements are smaller. With ARMCO Plates you buy no excess metal, and this keeps job costs down.

You'll find ARMCO Liner Plates the simplest, most inexpensive way you ever saw to install conduits, sewers and similar structures. You avoid the hazards and inconvenience of open trenching and business above ground continues as usual. Use ARMCO Tunnel Liner Plates on that next job to "hole through" ahead of schedule and under the estimate. Write for data. Armco Drainage & Metal Products, Inc., 1195 Curtis St., Middletown, Ohio. Offices in Principal Cities.

ARMCO
TUNNEL LINER PLATES

For Uniform High Quality no matter what the job . . . Demand

REEVES ARMY TWILL

Look for this Label in Your Uniforms, Utility and Work Clothes!

WHATEVER your industry, it is good business to specify uniforms and work clothes of durable, smart looking Reeves Army Twill. Its high tensile strength insures rugged wearability. It tailors smartly, too, and is color-fast to sun, water and perspiration. Sanforized Shrunk*, it is the fabric for long-lasting economy. Remember —over 90 million yards of this same fabric helped equip America's fighting men—exceeding Government specifications under the toughest climatic and combat conditions.

**Residual shrinkage less than 1%.*

THE REEVES FABRIC GROUP INCLUDES:

Reeves Army Twill • Reeveking Gabardine
Glengarrie Poplin • Marine Herringbone
Byrd Cloth • Warrior Twill • Mountain Cloth
Pima King Broadcloth • Reevecord

MADE OF FINE COTTONS

SPINNING WEAVING DYEING FINISHING
Reeves FABRICS

"FROM COTTON TO CUTTER"

REEVES BROTHERS, INC.

54 WORTH STREET, NEW YORK 13, N. Y.

REPRESENTATIVES IN: *Akron • Atlanta • Boston • Chicago • Dallas • Los Angeles • Philadelphia • Portland, Ore. • St. Louis • Montreal • Toronto*

Speed Control of Pumps

Regutron, manufactured by the Electric Machinery Mfg. Co., Minneapolis 13, Minn., is a device for use in controlling speed of the magnetic drive, providing excitation and speed control of centrifugal pumps, compressors, and blowers on which the magnetic drive is used.

It rectifies 3-phase supply current to energize magnetic drive, and adjusts value of current to hold operating speed of load to within plus-or-minus

This Regutron has a free-standing NEMA Type 1 cabinet.

one percent of the selected speed, which is obtained and maintained by automatic or manual positioning of a small potentiometer. Since excitation current from the Regutron is balanced against the voltage from a tachometer generator belted to the load, speed is held constant despite variation in prime-mover speed or changes in load or voltage.

Other components of the control system guard against effects of overvoltage, undervoltage, short-time power failure, and improper operation of tubes or amplifier.

New Management Pattern Of G-E Apparatus Dept.

General Electric's Apparatus Department, largest and oldest manufacturing division of the company, is establishing an "integrated operating unit form of management to provide for expanded production," it was announced by R. C. Muir, vice-president and general manager of the department.

The Apparatus Department, which is responsible for General Electric's capital goods business, is a manufacturer of power-producing and power-consuming equipment for industry, utilities, and the transportation field. The new organization, Mr. Muir said, consists of separate operating units, each with a manager responsible for all phases of business, including engineering, manufacturing, and sales.

The new units, to be known as divisions of the Apparatus Department, and the names of the managers appointed are:

Schenectady, N. Y., Turbine and Gear Divisions, J. W. Belanger; Control Divisions, K. R. VanTassel; Large Motor and Generator Divisions, J. M. Crawford; Small and Medium Motor Divisions, W. H. Henry; Aeronautic and Ordnance Systems Divisions, W. C. Heckman; Industrial Heating Divisions, C. L. Ipsen; Lighting and Rectifier Divisions, A. F. Dickerson; Wire and Cable Divisions, B. F. Isley.

Ft. Wayne (Ind.) Fractional-Horsepower Motor Divisions, M. E. Lord; Specialty Transformer and Ballast Divisions, W. C. Wichman; West Lynn (Mass.) Works, Meter and Instrument Divisions, N. M. DuChemin; Lynn (Mass.) River Works, Aircraft Gas Turbine Divisions, H. D. Kelsey; Pittsfield (Mass.) Transformer and Allied Product Divisions, Robert Paxton; Philadelphia (Pa.) Switchgear Divisions, R. F. Tinnerholm; Erie (Pa.) Locomotive and Car Equipment Divisions, G. W. Wilson.

New Auxiliary Lamps For Emergency Lighting

Two new Big Beam auxiliary lamps for emergency use when regular lighting circuits fail have been developed and announced by the U-C Lite Mfg. Co., 1040 W. Hubbard St., Chicago 22, Ill.

Projecting a 2,000-foot light beam, the Big Beam single-head Model No. 801 and dual-head Model No. 802 may also be equipped with floodlight snap-on lens for diffusing light over a wide area.

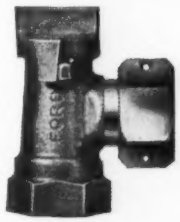
The lamps operate on four standard dry-cell batteries and are equipped

The lamp heads of the Big Beam auxiliary may be turned a full 360 degrees in any direction.

with a mechanism that automatically switches on the auxiliary when there is a circuit failure. It may also be used as a regular portable hand electric lamp, switched on or off at will.

RINGSTYLE
ANGLE VALVES

Inverted-key, precision-machined angle valves with meter coupling nuts attached. A most satisfactory valve for many types of outside and basement meter settings.



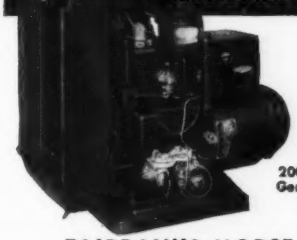
Ringstyle Meter Valves are made for meters from ⅝" to 1" in size and for connecting to either iron pipe or copper tubing.

Catalog and sample for the asking.

The FORD
METER BOX COMPANY, INC.
Wabash, Indiana

No. 4

EMERGENCY POWER INSURANCE!



2000-Watt Generating Set

FAIRBANKS-MORSE GENERATING SETS

INSURE yourself NOW against electric power failure. These performance-proved generating sets, installed as stand-by units, will give dependable service even under continuous, heavy-duty operation. A.C. and D.C. types, remote and automatic start, 350- to 35,000-watt capacities. Send today for FREE literature!

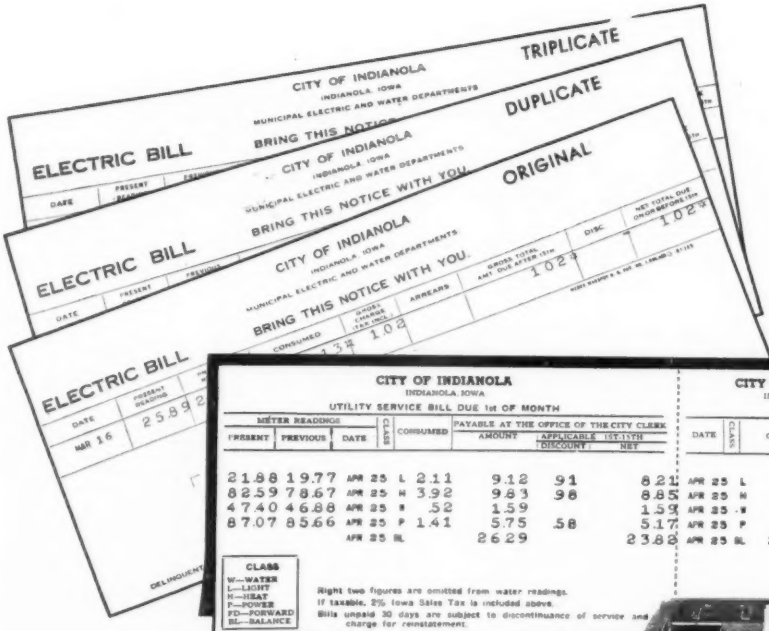
Fairbanks-Morse
A name worth remembering

FAIRBANKS, MORSE & CO., Dept. N-12
Chicago 5, Illinois
Please send free literature on Fairbanks-Morse Generating Sets.
Name.....
Address.....
City..... *State*.....

POST-CARD ELECTRIC AND WATER BILL

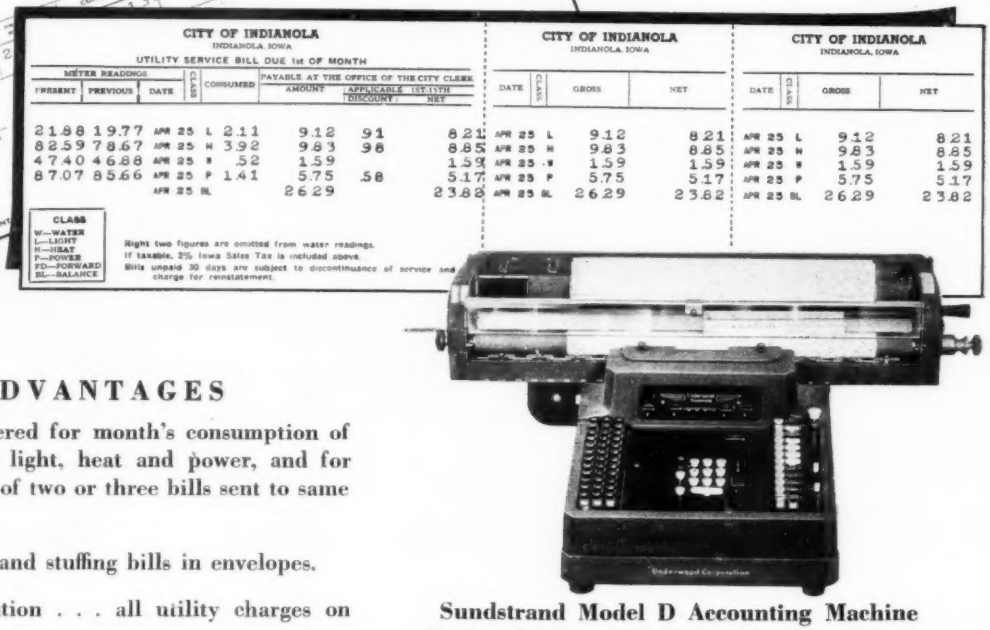
Saves Postage and Time . . .

Concise Bill Facilitates Prompt Payment



OLD BILL
in triplicate—one for each type of service.

NEW BILL—
contains all types of service: Light, heat, power, water.



CITY OF INDIANOLA
INDIANOLA, IOWA
UTILITY SERVICE BILL DUE 1st OF MONTH

METER READINGS PRESENT	METER READINGS PREVIOUS	DATE	CLASS	CONSUMED	PAYABLE AT THE OFFICE OF THE CITY CLERK AMOUNT	APPLICABLE DISCOUNT (1ST-15TH)	NET
2188	1977	APR 25	L	211	9.12	91	8.21
8259	7867	APR 25	H	392	9.83	98	8.85
4740	4688	APR 25	W	52	1.59		1.59
8707	8566	APR 25	P	141	5.75	58	5.17
		APR 25	BL		26.29		23.88

CLASS
W—WATER
L—LIGHT
H—HEAT
P—POWER
PD—POWERD
BL—BALANCE

Right two figures are omitted from water readings.
If taxable, 2% Iowa Sales Tax is included above.
Bills unpaid 30 days are subject to discontinuance of service and charge for reinstatement.

CITY OF INDIANOLA
INDIANOLA, IOWA

DATE	CLASS	GROSS	NET
APR 25	L	9.12	8.21
APR 25	H	9.83	8.85
APR 25	W	1.59	1.59
APR 25	P	5.75	5.17
APR 25	BL	26.29	23.82

CITY OF INDIANOLA
INDIANOLA, IOWA

DATE	CLASS	GROSS	NET
APR 25	L	9.12	8.21
APR 25	H	9.83	8.85
APR 25	W	1.59	1.59
APR 25	P	5.75	5.17
APR 25	BL	26.29	23.82

ADVANTAGES

One bill rendered for month's consumption of electricity for light, heat and power, and for water, instead of two or three bills sent to same customer.

Saves postage and stuffing bills in envelopes.

Ease of operation . . . all utility charges on one bill.

Sundstrand Model D Accounting Machine

Sundstrand automatically prints all charges and totals on the bill form and the stub—It provides separate totals for light, heat, power, water charges—and also provides proof against errors in billing. Anyone can learn to operate in a few minutes—No trained operator required.

SUNDSTRAND

Public Utility Billing — Tax Accounting — Budgetary Accounting — Payroll

UNDERWOOD CORPORATION

Accounting Machines . . . Typewriters . . . Adding Machines . . . Ribbons, Carbon Papers and Other Supplies

One Park Avenue *Sales and Service Everywhere* **New York 16, N. Y.**

Syntron Buys Blairsville Plant

The Syntron Co., Homer City, Pa., has purchased the former H. K. Porter Co. shell plant at Blairsville, Pa. Syntron's large, heavy duty, vibratory feeders and conveying equipment will be manufactured there in the future; its line of electric tools, gasoline hammers, concrete vibrators, paper joggers, shaft seals, and new products will be manufactured at its Homer City plant, where the company's general offices and headquarters will remain.

Another recent acquisition by Syntron is a branch sales office in Montreal, Canada, at 4695 Sherbrooke St., West. This branch will be under the supervision of C. F. A. Gray.

Calcium Chloride Technicians Hold Pennsylvania Meeting

The Calcium Chloride Association recently held a three-day conference in Uniontown, Pa., attended by technical representatives of its four member companies, The Dow Chemical Co., Wyandotte Chemicals Corp., Solvay Sales Corp., and the Columbia Chemical Division of The Pittsburgh Plate Glass Co.

The meeting, under the supervision of G. H. Kimber, managing director of the Association, included a discussion of the use of calcium chloride as an admixture in concrete, delivered by E. W. Geary, Columbia Cement Division of Pittsburgh Plate Glass; a report on the use of calcium chloride in road soils, given by Elden J. Yoder, who had conducted the research at Purdue University, and a review by engineers from the four member companies of the association's research in highway engineering and coal fields.

Meetings were also held to discuss past accomplishments and future plans in such calcium-chloride-use fields as bases, frost, ice control, surface consolidation, concrete, and coal.

Cataphote Appoints Groce

D. B. Groce has been appointed by the Cataphote Corp., Toledo 10, Ohio, as a representative for highway signs and markers, reflector buttons, street signs and posts, danger signals and railroad-crossing signs, covering the distributors in Ohio and Michigan.

CITY MANAGER
Wanted

City of Mill Valley, suburb of San Francisco, has position open for City Manager. Engineering and City Manager experience preferred.

Address:

CITY CLERK
P. O. Box 231
Mill Valley, Calif.

BUFFALO METER
Simplicity
PRODUCES A PROFIT

● $200 to $400 revenue is produced by a water meter in a twenty year period.

What are the costs? What is the profit?

Buffalo Meters both American and Niagara, provide high earnings at low cost because of their simple but sturdy construction. First cost is moderate, maintenance cost far below average. Here is part of the reason.

The gear train is cast from a hard, tough alloy of bronze, the gear teeth are machined, to provide rolling action, then coated with a hard shell of chromium to increase wear resistance. The weight of each gear is carried on a patented, dirt-proof, enclosed bearing. Other features such as the extra thick reinforced disc, patented frost bottom and engineered ease of assembly also save maintenance time . . . mean lower cost when repairs are finally needed.

Write for the "specifications" of American and Niagara Water Meters. Strategic design features are illustrated and described.

AMERICAN BRONZE CASE **NIAGARA** GALV. IRON CASE
WATER METERS
BUFFALO METER COMPANY
2902 MAIN STREET • BUFFALO 14, NEW YORK
Simplicity

whatever your accounting requirements . . .

Investigate — Remington Rand BOOKKEEPING MACHINES

Management efficiency implies effective savings in your accounting department, too. Whether your bottleneck is accounts receivable, accounts payable, payrolls, or any other important administrative application, Remington Rand bookkeeping machines will simplify the operation and save you time and money.

Here are a few reasons why. They're fast! Automatic balances, computed *and* printed, interchangeable registers, complete electrification and simplicity of operation mean quick results with lower administrative costs. These bookkeeping machines prepare two, three or more related forms in one operation. For smaller companies, one machine can produce accounts receivable, and in a moment or two be changed to accounts payable, payrolls, or any other record.

Ask your local Remington Rand representative to show you how these machines will materially increase your accounting efficiency. Or write for free booklet "Toast of the Business World".

Free Booklet

Remington Rand Inc.
Adding-Bookkeeping-Calculating Machines Div,
Dept AC, 315 Fourth Ave, New York 10, N Y

Yes! I'd like to know how Remington Rand Bookkeeping Machines increase accounting efficiency. Send me "Toast of the Business World"

NAME_____

ADDRESS_____

CITY_____ STATE_____

Remington Rand

MACHINES FOR MANAGEMENT

New Electric Cash Registers

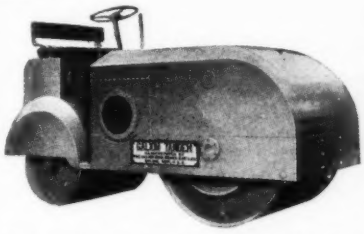
A new line of electrically operated cash registers is announced by the Ohmer Corp., Dayton 1, Ohio, subsidiary of Rockwell Mfg. Co.

The registers will be available in one, two, or four totals, having one to four total keys, a "charge" key, and "paid out" key, and a "no sale" key for departmentalizing sales and classifying

The new Ohmer Class M-300 cash register has an autographic-type detail record, so that pertinent data concerning any registration may be written on it.

transactions, and six initial keys to identify personnel. Registration range is from 1 cent to $999.99. A locked-in detail printed record is made of every transaction, with the last ten sales visible for checking.

New Galion 3- to 5-Ton Roller



The motor of this 3- to 5-ton Tandem roller is completely enclosed under the housing.

A 3- to 5-ton Tandem roller has been added to the line of rollers manufactured by The Galion Iron Works & Mfg. Co., Galion, Ohio.

Featuring the variable weight principle that Galion's 5- to 8-, 8- to 12-, and 10- to 14-ton rollers incorporate —the method of varying a roller weight by ballasting—the "3-to-5" roller has a metal weight of 7,120 pounds and a ballasted weight of 10,520 pounds. Fully ballasted, the compression under the main roll is listed as 170 pounds per inch of roll width, and 85 pounds under the steering roll. Both rolls are fitted with front and rear scrapers and mats.

Automotive-type steering permits easy operation. Forward and reverse motion is controlled by a single lever. There are two speeds in each direction, controlled by two friction clutches. The mechanism is powered by a 4-cylinder, air-cooled, 25-hp motor.

Burroughs to Expand

Directors of the Burroughs Adding Machine Co., 6071 Second Blvd., Detroit, Mich., have authorized a $3,000,000 expansion program. The backlog of orders amounts to $96,000,000. John S. Coleman, president, stated that it is Burroughs' policy now to invest a large percentage of its current earnings in plant improvement and expansion.

Stilson & Associates Move Office

Alden E. Stilson & Associates, Ltd., Consulting Engineers, has moved its offices to 209 South High St., Columbus, Ohio. The company specializes in waste-disposal surveys, sewage-treatment supervision, and water-supply design.

Permutit Opens New Office

The Permutit Co., 330 W. 42nd St., New York, N. Y., has opened a branch office in the Commerce Bldg., 119 Main St., East, Rochester, N. Y., under the direction of Austin F. McCormack.

PRESENTING

The Sensational New

FEATHERWEIGHT

MODEL 87

GOLDAK

PIPE LOCATOR

Goldak Invites Comparison

- Shows - not approximate but *EXACT* location of buried pipes. mains, services, gates, tees, ells, stubs, etc.
- Completely new electronic circuit provides an incomparably strong positive location signal.
- No trick tubes or other hard-to-get parts. Uses readily available standard miniature radio tubes and flashlight batteries.
- Compact in design, ruggedly built for lifetime use.
- Operating simplicity. A one-man instrument.
- Featherweight - only 11 lbs. complete.
- Guaranteed superior performance - resulting from 15 years of electronic research and construction of locating instruments.

GOLDAK *OUTSELLS* - BECAUSE IT *EXCELS*

WRITE FOR DETAILS

THE GOLDAK COMPANY

1544 West Glenoaks Blvd., Glendale 1 California

WAYNE motor SWEEPER

FAST, ECONOMICAL, EASY TO OPERATE AND MAINTAIN

Manufactured in California, the Wayne motor Sweeper embodies the progressive features of design inherent to development in the West. Proven by years of thorough on-the-job tests under all sweeping and street conditions, the exceptional performance of the Wayne has deservingly won the respect of modern municipalities. On streets, parking lots, playgrounds — or any paved surface, the Wayne will do your sweeping work for less cost per mile, and the Wayne sweeps clean.

DELIVERY IS OBTAINABLE IN 60 TO 90 DAYS.

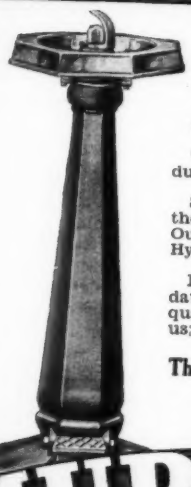
The Wayne picks up rubbish, cans, dirt and litter, and fills its 2-cubic-yard dirt hopper to capacity. The load is carried to any point desired and dumped in a neat, compact pile through the quick-opening, hydraulically-controlled hopper doors.

Write for information

WAYNE motor SWEEPER DIVISION

(BROWN-BEVIS COMPANY)

4900 SANTA FE AVENUE • LOS ANGELES 11, CALIF.



GET THE JUMP ON 1948

Copper will not be plentiful.

There will be a scramble for products made of bronze and brass.

Substitutes will not be used in the manufacture of MURDOCK Outdoor Drinking Fountains and Hydrants.

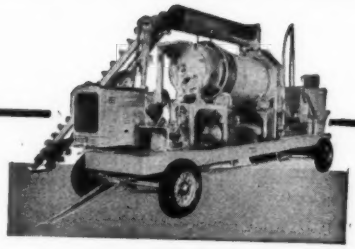
If you want yours on a specified date in '48, specify that date and quantity NOW. Cooperate with us; we'll cooperate with you.

The Murdock Mfg. & Sup. Co.

Cincinnati 2, Ohio

MURDOCK

OUTDOOR DRINKING FOUNTAIN
ANTI-FREEZING COMPRESSION HYDRANT
LARGE ANTI-FREEZING HYDRANTS 1¼" TO 2" INCLUSIVE
SELF-CLOSING ANTI-FREEZING HYDRANT
"LOCK-LID" STREET WASHERS 3/4" and 1" SIZES



PORTABLE ASPHALT PLANTS

Write for Catalog

Elkhart **White Mfg. Co.** Indiana

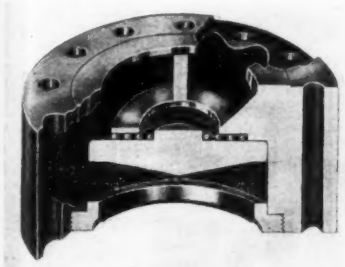
The Greatest Gift of All Is Health

BUY

Christmas Seals

And Help Stamp Out Tuberculosis

Flanged Check Valve Provides Guided Liquid Flow

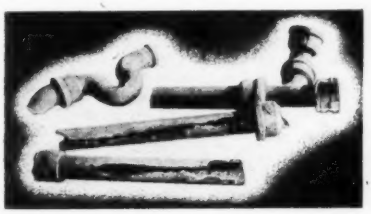


The Williams-Hager silent check valve has a side-guided, free-floating design which permits accurate operation of the valve in a horizontal, vertical, upside-down, or angular position. The seat and disc are renewable, and the valve may be reseated without special tools.

Manufactured of bodies of iron, semi-steel, cast steel, government bronze, stainless steel, or monel metal, the valves are fitted with seats and discs of either government bronze, stainless steel, or monel metal. The valve may be obtained in sizes from one inch to 20 inches, for pressure up to 6,000 pounds. It will handle any type of either hot or cold liquid, in centrifugal, boiler feed, reciprocating, deep well, plunger, triplex, and other types of pump lines.

The valve is manufactured by The Williams Gauge Co. 1620-22-24 Pennsylvania Ave., Pittsburgh 12, Pa.

Silicon Iron Gives Protection Against Corrosion



Cast-iron soil pipe and fittings after three years of service in a chemical laboratory.

Duriron, a high silicon iron that contains about 14½% silicon, which is manufactured by The Duriron Co., Inc., Dayton 1, Ohio, is resistant to most corrosives and to all acid wastes normally encountered in chemical treatments of sewerage, water, and other municipal processes. The corrosion and erosion-resistant qualities present in Duriron sinks, sink strainers, traps, pipes, and fittings are inherent, not dependent upon coating, lining, or glazing.

Duriron Acid Proof pipe and fittings are installed in the same way that extra heavy cast-iron soil pipe is installed, except for the use of asbestos packing instead of hemp or oakum. The working dimensions are the same, so specially skilled labor would not be required.

Specifications of Duriron are: weight, .255 pound per cubic inch; melting point, 2300° F, thermal conductivity (Ag. = 1), 0.125° C.; tensile strength of a ½-inch diameter bar, 16,000 pounds per square inch; coefficient of expansion, 12.2 x 10^{-6} per degree Centigrade, 20° to 100° C.

Stewart Chief Engineer Of American Coach & Body

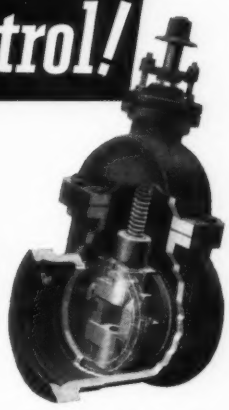
Leonard A. Stewart has been appointed chief engineer of the American Coach & Body Co., Cleveland, Ohio.

Leonard A. Stewart

A graduate of General Motors Institute of Technology, Mr. Stewart has been with Mack Trucks, Inc., for the past eight years. Before that, he was body engineer of Diamond T Motor Car Company of Chicago. All in all, he has had 21 years of experience in the automotive design and engineering field, working with such firms as International Harvester, Stanley Steam Motor Corp., Fisher Body Corp., Cadillac Motor Car Co., and Gardner Motor Car Co.

You Can Have Control!

because 4 POINTS insure it!



Mueller Gate Valves offer a low cost method of controlling water in a distribution system as they provide the means for a positive shut-off, are easily installed, and are adaptable to meet the demands of most operating conditions. They may have rising or non-rising stems, open either right or left, and due to their exclusive construction features, they will operate with equal efficiency when installed vertically or horizontally.

The Gate Assembly contains the 4 POINT WEDGING MECHANISM. When the valve is closed, pressure is applied at 4 POINTS near the outer edges of the discs. This prevents warped or sprung discs and prevents any chance of leaking. Before you replace any old valves or install new ones, be sure you know all about this superior Mueller Gate Valve. Write us for full information.

MUELLER CO.

CUT TALL GRASS... WEEDS...BRUSH
Faster and Easier

Ideal for water works, sewage plants, parks, playgrounds, airports, roadsides, vacant lots, tourist camps. Mows fast and clean around buildings, trees, and fences.

Very easy to handle on rough ground, steep slopes or hard to reach places. Cuts 1½" from ground. Does work of 8 men.

EASY TO LOAD

Light weight of JARI makes it easy for one man to load into truck or car trunk for quick moving. Rugged. Dependable.

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AUTOMATIC POWER OR TANK PRIMERS

AIR RELEASE VALVES

FOR

FILTER PIPE LINES
DISTRIBUTION LINES
AND OTHER USES
17 TYPES

VALVE AND PRIMER CORPORATION

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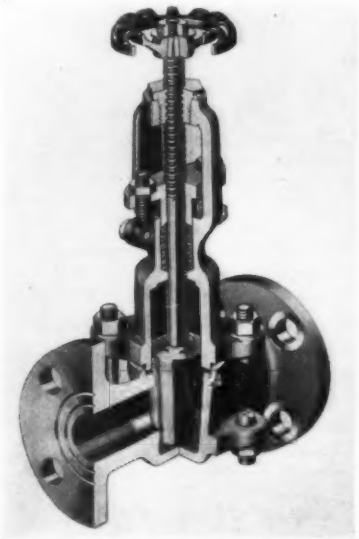
CHICAGO 2, ILL.

Corrosion-Resistant Plug Gate Valves

A new line of corrosion-resistant plug gate valves combining the advantages of both straight-through flow valves and the throttling globe valves has been announced by the Crane Co., 836 S. Michigan Ave., Chicago, Ill.

Among the benefits emphasized by the manufacturer are that these plug gate valves offer very little resistance to flow in the wide-open position, having a maximum discharge equal to that of a wedge gate valve and about twice that of a globe valve; the design permits very close throttling at both high and low velocities; the valve is not subject to sticking in the closed position; resistance to cutting action of the fluid when in a throttled position is equal to that of conventional plug-type globe valves, and there is no tendency to galling.



A cut-away view of the new Crane plug gate valve.

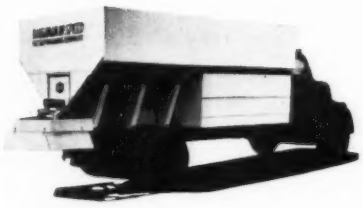
With either screwed or flanged ends in sizes from ½ inch to 2 inches, the valves are regularly furnished in either 18-8 Mo or Monel metal, and may also be made in various other alloys to customer's specifications.

The Baughman Model K-8 Cinder Spreader

The Baughman Model K-8 cinder spreader is a unit especially designed for ice control. It spreads cinders, sand, salt, chips, and other skid-preventing materials at speeds up to 25 mph.

Self-loading by means of a steel drag-chain which conveys the material to the distributing mechanism in the rear, the K-8 spreads patterns from 8 to 30 feet in diameter, with the volume completely regulated.

A special built-in heater is a feature of the K-8. This heater keeps the spreading material warm and free-flowing, and prevents working parts from becoming brittle in extremely low temperatures.



Two-in-one operation, clearing snow in the front and spreading cinders in the back, is possible with this spreader attachment.

Baffle-plate guards restrict the spread pattern to the desired area. This prevents waste of material and injury to pedestrians or damage to parked cars.

The K-8 can also be used for such other jobs as rebuilding road shoulders, stockpiling sand and gravel, and spreading lime and seed in parks and airports.

Manufactured by the Baughman Mfg. Co., Jerseyville, Ill., the K-8 is available in body capacities of 9, 11, 13, 15, and 17 cubic yards.

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- PROLONGS LIFE OF SMALL WATER MAINS
- RESTORES FULL CAPACITY
- MAINTAINS HIGH VOLUME
- ELIMINATES RED WATER
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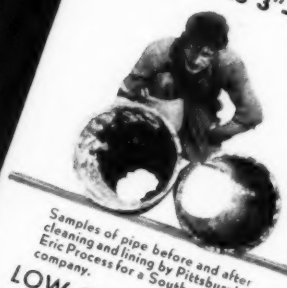
- PRESERVES EQUITY OF WATER MAIN INVESTMENT

FOR WATER MAINS 3"-24" I. D.



Samples of pipe before and after cleaning and lining by Pittsburgh-Eric Process for a Southern water company.

LOW OVERALL COST

Makes possible a Complete Rehabilitation Program for Your Water System

A New Standard of Water Main Efficiency!

Pittsburgh-Eric Process provides a combined pipe cleaning and lining service that not only restores full capacity to water mains, but, in addition a "LECTUMEN" lining, electrolytically applied, protects the pipe from underlying deterioration. Because the "LECTUMEN" lining covers the pipe interior with a smooth, uniform coating, frictional losses are reduced to a minimum. Because it resists the attack of corrosive waters, many additional years of useful pipe service may be anticipated. That is why it will pay you to investigate the Pittsburgh-Eric Process TODAY. Our nearest office in your area will gladly supply the full details.

2,500,000 Feet Coated in 10 Years

LECTUMEN COATING

LECTUMEN is an emulsified solution of bitumen especially prepared for use with Pittsburgh-Eric Process. Imparts a smooth, long-lasting coating to steel and C. I. pipe interiors. As much as 1,000 feet of main can be cleaned and lined at one time. Under normal conditions, service can be restored the same day.

PITTSBURGH PIPE CLEANER COMPANY

133 Dahlem St., Pittsburgh 6, Pa.

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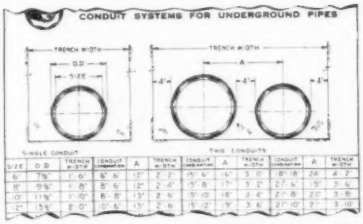
CINCINNATI · ST. LOUIS · DETROIT · BOSTON

Insulated Pipe Data



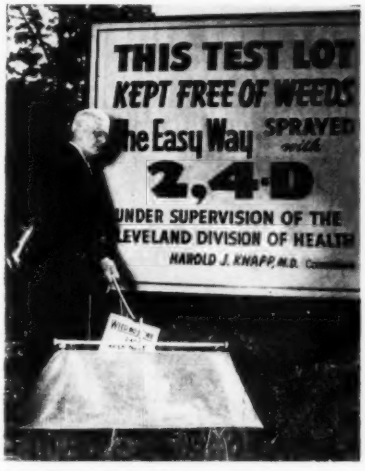
A portion of one of the tables included in the Ric-wil booklet.

Designers will find that many of their uncertainties on the use of insulated pipe for underground purposes will be simplified through the use of design data compiled by the Ric-wil Co., Cleveland, Ohio. Included are tables of dimensions for one or more conduits in one trench, tables of maximum conduit capacities of wrought iron and steel pipe sizes, and standard prefabrication expansion loop details.

Also given are construction details of Ric-wil insulated pipe units and available accessories. Copies of the booklet may be obtained by writing the Ric-wil Co., Cleveland, Ohio.

Cleveland Uses New Sprayer In Fight Against Weeds

A new low-gallonage, high-pressure sprayer for using 2,4-D weed killer is being employed in Cleveland, Ohio's fight against weeds during the growing rather than pollination season.

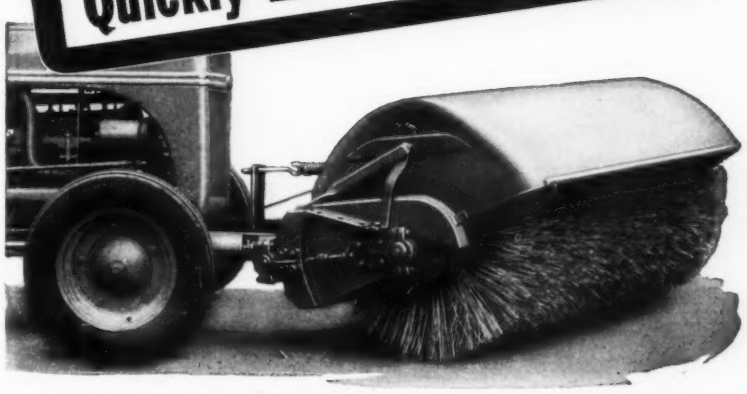


Dr. Harold J. Knapp tests the new sprayer.

Test plots were sprayed, under the direction of Health Commissioner Harold J. Knapp, and it was discovered that the use of this machine enabled them, with one quart of chemical to two quarts of water, to spray an acre of ground. Usually one treatment will suffice.

The sprayer is manufactured by the Sherwin-Williams Co., 101 Prospect Ave., Cleveland, Ohio.

Remove RUBBISH and SNOW
from Your Streets, Alleys and Walks
Quickly-Easily-at Low Cost



LITTLE GIANT POWER SWEEPER

If you find hand sweeping and snow shoveling too costly and slow, but your budget does not permit extensive expenditures for mechanical equipment, then the Little Giant Sweeper will meet your requirements.

For All Tractors, Jeeps

Little Giant Sweeper mounts on all tractors and Jeeps, normally requiring less than 90 minutes to attach. Operates from power take-off. Brush sets at 30 degree angle. Sweeps to right side of tractor, outside of wheel path. Sweeps against forward motion of tractor for increased efficiency. Dependable chain drive—all moving parts are shielded for operator's protection.

Long-Wearing Brush—Dust Hood

Brush lengths of 5, 6, 7, 8 and 9 feet can be furnished. The 5-foot length is recommended for sidewalk snow sweeping. Long-wearing Palmyra fibre brush, refillable at nominal cost. Adjustable ground pressure—brush can be quickly set to fit all sweeping conditions. Dust hood helps keep tractor clean—assures clear vision for operator. Hood can be removed in 15 minutes for sweeping snow.

Little Giant gets the sweeping job done faster. It quickly pays for itself in labor saved. The initial investment is low—very little upkeep expense. Can be used year-round—for snow in the winter and rubbish the rest of the year.

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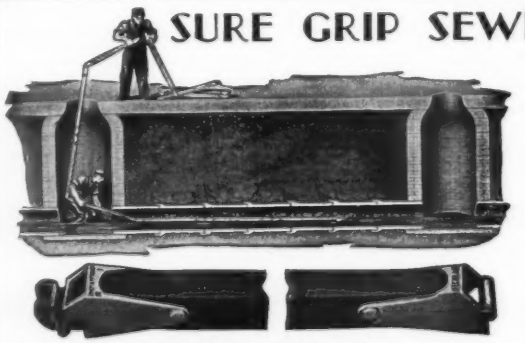
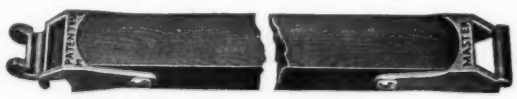


The REGULAR, a light rod,
Fir stock 1⅛ x 1¼ inch square.

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.



The MASTER, a heavy duty rod,
Fir stock 1½ x 1½ inch square.

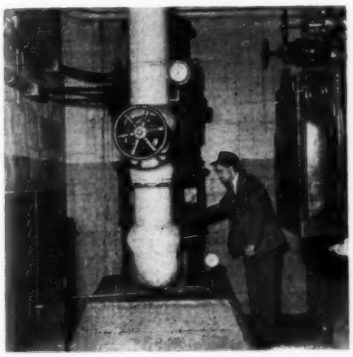
Write for catalog on complete line of sewer cleaning equipment.

EXPANDING SEWER MACHINE CO.
NAPPANEE, IND.

20 Years Without Repair

A Byron Jackson pump and General Electric motor have seen twenty years of service together without requiring a single repair, and, as long as it continues running as smoothly as it has in the past, the city even objects to pulling the pump for inspection.

The BJ Deepwell Turbine, manufactured by The Byron Jackson Co., Los Angeles, Calif., was installed in the Minneapolis, Minn., Auditorium in 1927, producing 1,620 gpm against a total head of 300 feet at 1,150 rpm drawing 150 hp. The pump still gives full capacity and head and actually does more head than 300 feet. The motor is a General Electric, standard vertical motor, type MTP 557, Class 6-150-1,200 to operate at 1,200 rpm using 220 volts.



The Byron Jackson pump, which has given 20 years of repair-free service and is still going strong.

New Sales Manager For Warren Foundry

John F. Benjamin has been appointed sales manager of the Warren Foundry and Pipe Corp., 11 Broadway, N. Y. C., according to a recent announcement by L. R. Dohm, President.

Mr. Benjamin has been with Warren Foundry and Pipe Corp. since 1919. For the past 15 years he has been sales engineer with headquarters at the New York office. Prior to that, he was in the production department. He fills the position left vacant by the death of John H. Morrison, vice-president.

Universal Concrete Holds Sales Conference

Attending the first annual two-day sales conference held recently in Columbus by Universal Concrete Pipe Co., 297 S. High St., Columbus, Ohio, were sales representatives, managers, and officials of 15 Universal plants.

Opening the session, H. X. Eschenbrenner, president of the company, discussed the need for expanded sales efforts and improved public relations correlated with a sense of promotion and advertising. Continuing Mr. Eschenbrenner's premise that advertising is a "new-found tool to supplement, not supplant, your sales efforts," J. M. Millious, advertising and sales promotion manager, spoke on the importance of the results that a good advertising program can secure.

Barber-Greene Appoints N. Y. Distributors

The Barber-Greene Co., Aurora, Ill., has appointed the Hooper Engineering Co., Skaneateles, N. Y., as exclusive distributor in Central New York, representing B-G's construction and industrial divisions.

Blaw-Knox Pipe For Los Angeles

The Power Piping Division of the Blaw-Knox Co., Pittsburgh 30, Pa., has received a contract from Los Angeles, Calif., for the supply and installation of all piping to be used in three new electrical power generating units of high-pressure, steam-turbine type.

The piping award amounts to approximately $1,250,000 and is a follow-up to piping contracts awarded Blaw-Knox in 1941 and 1946 for the first two high-pressure steam-turbine units ordered by Los Angeles.

Each of the three new turbines will be of 75,000-kw rating and each boiler unit will have a capacity of 825,000 pounds of steam per hour.

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Chief Operator for Sewage Treatment Works for 20,000 people. Requirements: At least four year's experience in operation of activated sludge plant; capable of performing chemical tests and analyses; experienced in handling men and in maintenance of mechanical and electrical equipment.

State education, experience and salary expected.

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E. Raymond Ambler, Secretary

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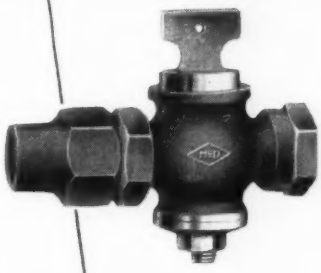

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Ever since 1856, when McDonald's started supplying the trade with waterworks goods, the emphasis has been on steady, increasing improvement. And now, as always, the very best in materials, the latest methods, the most modern design means even higher quality. The Diamond Line is better than ever! This McDonald Curb Stop with solid brass tee handle is for copper service pipe. Round way, inlet end copper pipe coupling—outlet end inside iron pipe thread. In sizes ½, ¾, 1, 1¼, 1½ and 2 inches. Also available in a stop and drain pattern.

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